

National Nuclear Security Administration



FY 2004 Annual Pollution Prevention Progress Report

National Nuclear Security Administration

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INTRODUCTION

The Fiscal Year (FY) 2004 National Nuclear Security Administration (NNSA) Annual Pollution Prevention Program Progress Report, issued by the NNSA Service Center (SC) Pollution Prevention (P2) program, provides the FY 2004 summary and status of P2 program activities for the NNSA sites, provides the status of NNSA's contributions toward meeting the 2005 Secretarial Goals for waste reduction, and highlights NNSA P2 program operations.

The 2005 Secretarial Goals for waste reduction were issued November 12, 1999 by the Secretary of Energy in a Secretarial Memorandum entitled: *Pollution Prevention and Energy Efficiency Leadership Goals for Fiscal Year 2000 and Beyond*. For purposes of this report, the Pollution Prevention goals contained in this memorandum are commonly referred to as the 2005 Secretarial Goals for Waste Reduction or Secretarial P2 Goals.

The requirement for conducting and issuing this report is found in the NNSA HQ NA- 3.6/Service Center P2 Program, Service Level Agreement (SLA), dated 13 October 2004 (Appendix B).

This report highlights FY 2004 P2 programmatic operations and activities for each of the nine U.S. Department of Energy NNSA sites. The NNSA sites include: the Kansas City Plant (KCP); Lawrence Livermore National Laboratory (LLNL); Los Alamos National Laboratory (LANL); the Nevada Site Office/Nevada Test Site (NSO/NTS); the Pantex Plant (PX); Sandia National Laboratories/New Mexico and California (SNL/NM and CA); the NNSA Tritium operations at the Savannah River Site (SRS), and the Y-12 National Security Complex (Y-12).

BACKGROUND

The goal of NNSA's P2 program is to ensure that NNSA site operations integrate and incorporate P2 principles and practices into all operational activities to eliminate or reduce the amount and toxicity of generated wastes, enhance environmental stewardship and be protective of worker and public safety. P2 should be considered in all aspects of site operations prior to any work being initiated that could have a potential impact on the environment.

Data for this report was gathered from the following sources: Data submitted on the Office of Environment, Safety & Health (HQ EH) P2 web site as part of the FY 2004 Annual P2 reporting process (waste generation and recycling data, P2 accomplishments, and site profiles); P2 award nominations; and affirmative procurement data; highlights and accomplishments provided by the sites to the SC throughout the year, and; SC P2 staff site visits, reviews, and information requests. All NNSA Site Office's and P2 program coordinators have had the opportunity to review and provided comments to this Report.

Data tables, graphs and charts contained in this report include data for all the NNSA sites unless otherwise noted, as well as data for Bettis and KAPL, Naval Reactor sites. Naval Reactors

became part of NNSA as a result of the 2001 Defense Authorization creating NNSA. Bettis, is the Bettis Atomic Power Laboratory, and KAPL, is the Knolls Atomic Power Laboratory. FY 2003 is the first year that these two sites provided data for the annual reporting process. Where applicable, 1993 baseline data for both sites has been included in the NNSA baseline totals and in the FY 2004 NNSA waste reduction calculations.

EXECUTIVE SUMMARY

A major focus of this report is to summarize and status NNSA's FY 2004 progress toward achieving the 2005 Secretarial Goals for routine waste reduction. Analysis of the FY 2004 waste generation data shows that NNSA achieved and exceeded the 2005 Secretarial goals for waste reduction in all waste types except Sanitary waste. In addition, NNSA sites made progress in waste reduction achievements over FY 2003 in all waste types, except again, in sanitary waste. The following data is provided for comparison purposes:

Waste Type	TRU m3	LLW m3	MLLW m3	HAZ mt	SAN mt	Recycle rate (%)
FY03 NNSA						
% Reduction	83.8	78.5	93.1	90.7	73.8	57
2005 Goal (%)	80	80	80	90	75	45
FY04 NNSA						
% Reduction	86.8	83.4	95.9	96.1	73.4	52.6
2005 Goal (%)	80	80	80	90	75	45

NNSA and NNSA site waste generation and waste reduction performance is summarized in detail in Appendix A. Based on waste reduction performance in FY 2003 and FY 2004 it appears that NNSA is on track toward meeting all of the 2005 Secretarial goals for waste reduction; however, it cannot be predicted from FY 2004 waste reduction performance that the 2005 goals will be achieved. Site operations can be highly variable in the quantity of waste they generate from their many mission activities. Data provided in this Report should be used as a tool for sites to focus their waste reduction efforts, such as in Sanitary waste. Site P2 programs must remain vigilant in their P2 efforts and must continue to focus resources on reduction of their problematic waste streams in order to achieve the 2005 goals.

In FY 2005 several significant P2 program milestones will be reached. The 2005 Secretarial goals for routine waste reduction, issued in 1999, are to be achieved by the Department, and Environmental Management Systems (EMS) are required to be implemented at all DOE facilities by December 31, 2005. As stated above, it appears that with continued NNSA sites waste reduction efforts, NNSA is on track to achieve the 2005 goals. Regarding EMS implementation, FY 2004 saw a strong emphasis at all the NNSA sites toward preparing sites to meet the December 2005 deadline. Two NNSA sites, the Kansas City Plant and the Savannah River Site's Tritium Operations Facility, have already met the requirements for EMS implementation with ISO 14001, EMS certification. Over the past few years, the Kansas City Plant EMS folks have provided their expertise and assistance to several NNSA sites to assist them in their EMS implementation. It appears that the NNSA sites will meet the December 2005 deadline for EMS implementation; however, some sites are further along in the process than others.

In FY 2004, NNSA launched its first NNSA P2 awards program with much success. A total of 15 P2 award nominations were received from the NNSA sites for work conducted in FY 2003. Five nominations were awarded NNSA Best-In-Class Environmental Stewardship Awards and 6 were presented with NNSA Environmental Stewardship Awards. The sites winning these awards were SNL/NM, LANL, SRS, Y-12, and Pantex. A P2 awards ceremony was conducted at each of the sites, the winners were presented with their awards by Ambassador Brooks or Deputy Principle Administrator, Jerry Paul.

During calendar year 2004 the Inspector General conducted an audit of the Department's P2 Program. The review was conducted to determine if the Department has maintained an effective P2 program. Specific to NNSA, the review included IG personnel visits and interviews with HQ NA 3.6, the NNSA service center P2 staff, and sites visits to LANL and SNL/NM. The Draft report on "The Department's Pollution Prevention Program" was issued January 14, 2005 and concluded that the Department has not maintained an effective P2 program. NNSA reviewed the draft report and provided a response to the IG in early February 2005. NNSA concluded that it agrees with the findings and recommendations and will determine an appropriate response to address the findings and recommendations for NNSA operations. Additional information regarding the specific recommendations identified in the IG draft report is provided in the Notable Items and Issues section of this report.

ORGANIZATION OF THE REPORT

This report is divided into two sections:

Section I: NNSA Pollution Prevention Program Summary and Status, provides the FY 2004 summary and status of NNSA's contribution toward achieving the Department's 2005 Secretarial Waste Reduction Goals and highlights specific programmatic issues impacting the NNSA P2 program. This section includes the following: *FY 2004 NNSA P2 Program Goals and Goal Status; NNSA/NNSA Site Specific FY 2004 Routine Waste Reduction Performance; and, Notable Items and Issues*. The *Notable Items and Issues* section provides a discussion related to subjects of interest or concern to the NNSA P2 program that currently, or may in the near future, have an impact on site P2 operations.

Section II: FY 2004 NNSA Pollution Prevention Program Site Summary, provides a summary and SC assessment of FY 2004 P2 program operations, issues, and activities for each of the nine NNSA sites.

Section I. NNSA P2 Program Summary and Status

FY 2004 NNSA P2 Program Goals and Goal Status:

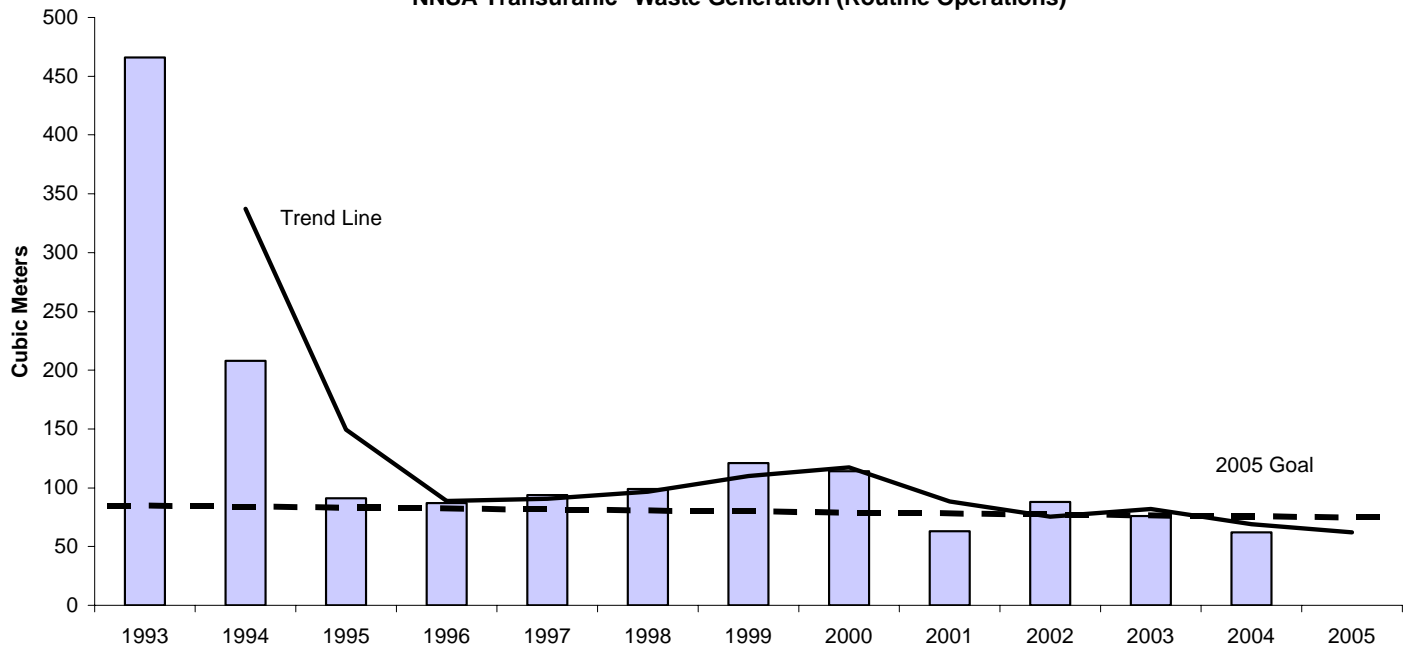
In November 1999, the Secretary of Energy challenged the Department “to minimize waste and maximize energy efficiency as measured by continuous, cost-effective improvements in the use of material and energy” by issuing a set of pollution prevention and energy efficiency goals to be achieved by 2005 and 2010. Defense Programs/NNSA adopted the Secretarial Waste Reduction Goals as their own to assist the Department in meeting its pollution prevention and energy efficiency goals. The Secretarial goals established for Department-wide and NNSA waste reduction are:

1. Reduce waste from routine operations by 2005, using a 1993 baseline, for these waste types:

Transuranic	80 percent
Low-Level Radioactive	80 percent
Low-Level Mixed Radioactive	80 percent
Hazardous	90 percent
2. Reduce sanitary waste from routine operations by 75 percent by 2005 and 80 percent by 2010, using a 1993 baseline.
3. Recycle 45 percent sanitary waste from all operations by 2005 and 50 percent by 2010

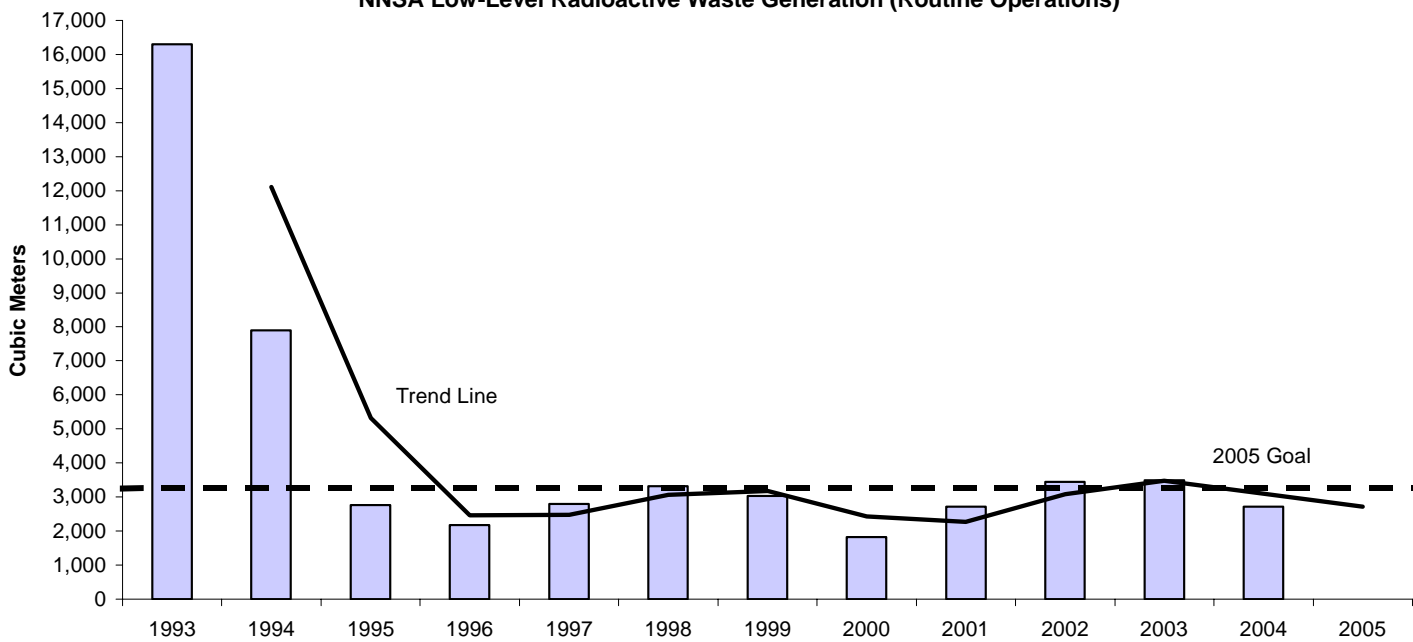
The following graphics depict the history of NNSA’s contribution toward meeting goals 1 and 2. The graphs chart waste generation trends beginning with the 1993 baseline year through FY 2004. Naval Reactor sites Knolls and Bettis data is included in the 1993 baseline year and 2003 and 2004 data.

NNSA Transuranic* Waste Generation (Routine Operations)

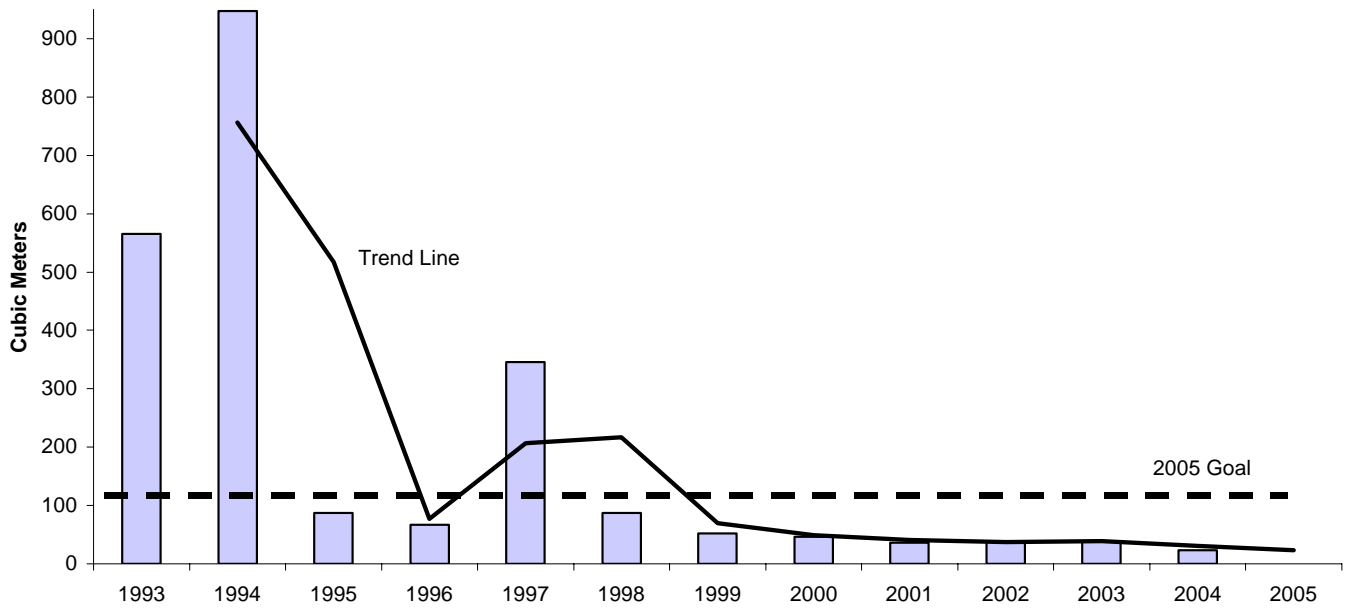


* Includes mixed transuranic waste.

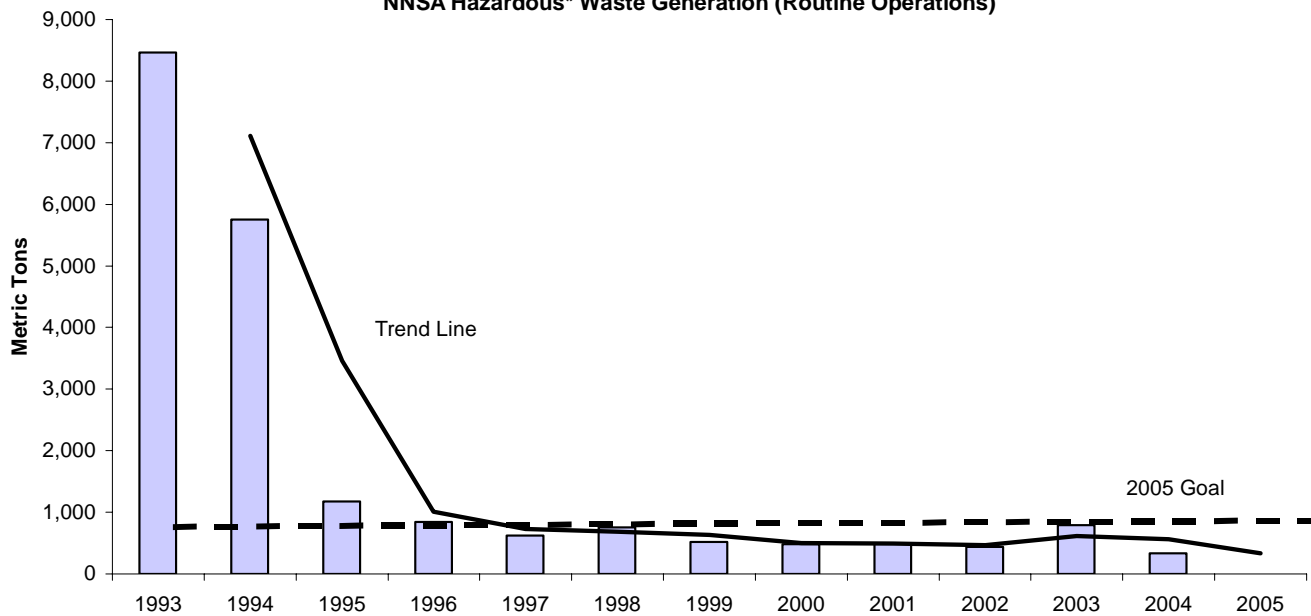
NNSA Low-Level Radioactive Waste Generation (Routine Operations)

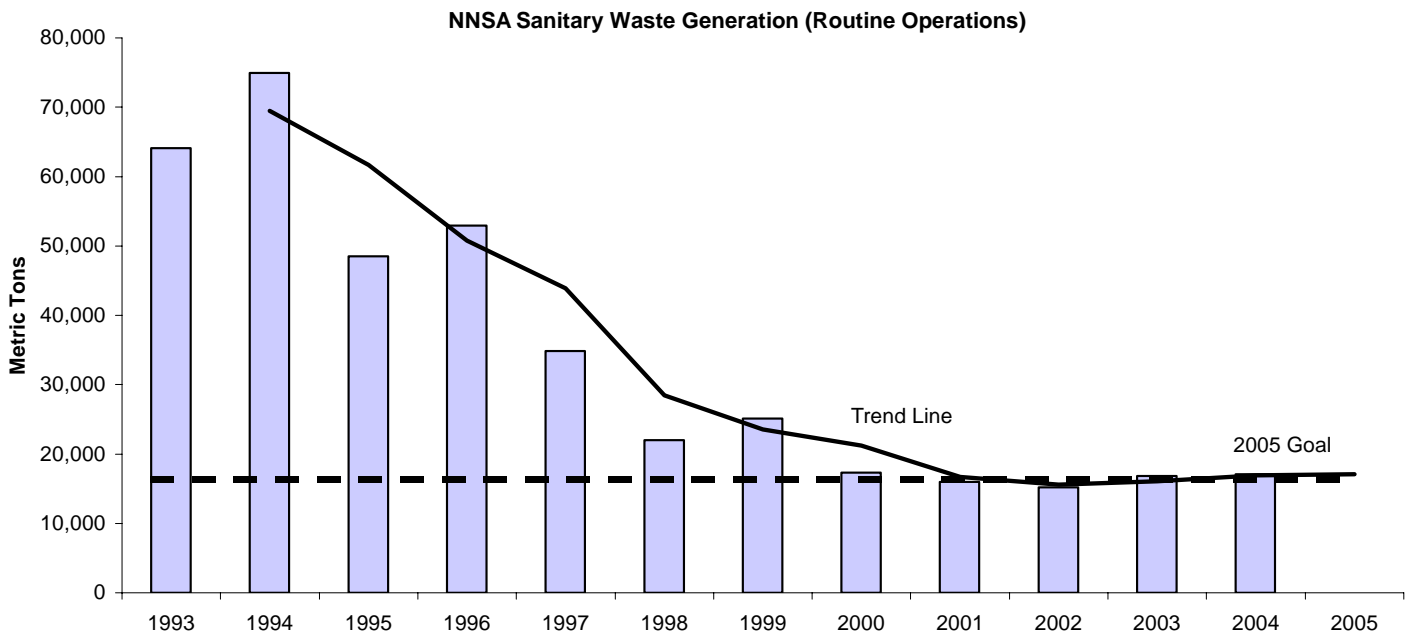


NNSA Low-Level Mixed* Waste Generation (Routine Operations)



NNSA Hazardous* Waste Generation (Routine Operations)





The following provides a status of NNSA's contribution toward meeting the recycling goal, (Goal 3, on page 5).

NNSA's recycling rate has been variable since data for this metric has been collected beginning in 1997. *Note: 1997 through 2002 data is calculated for the Albuquerque Operations Office sites only; this excludes LLNL, NV, Y-12 and SRS. FY 2003 and 2004 data includes all NNSA sites (including Knolls and Bettis) in the calculation except for the NNSA SRS Tritium Operations.

1997 - 59 percent
 1998 - 52 percent
 1999 - 35 percent
 2000 - 44 percent
 2001 - 50 percent
 2002 - 45 percent
 *2003 - 57 percent
 *2004 - 53 percent

NNSA/NNSA Site Specific FY 2004 Routine Waste Reduction Performance

Appendix A contains the FY 2004 NNSA and NNSA site specific routine waste generation and waste reduction performance data for each of the Secretarial Waste Reduction goals in tabular format. The table lists each of the NNSA sites, FY 2004 routine waste generation volumes, the percent reduction as related to the 1993 baseline by waste type, the 1993 baseline, and the FY 2004 site recycling rate. In addition, the table numerically depicts NNSA's overall FY 2004 performance to the 2005 goals.

Notable Items and Issues:

- ***P2 Best Practices:***

To facilitate the transfer of successful P2 practices across the DOE Complex and to further progress in achieving the 2005 Secretarial goals for waste reduction, the Office of Environment, Safety and Health collaborated with P2 program coordinators across the Department to develop a Waste Reduction Revitalization Initiative Report. This report summarizes P2 best practices that DOE sites, including NNSA, have identified as opportunities to reduce waste. The report provides site-specific examples of successful P2 projects and practices that can be implemented at other DOE sites. This report can be found at: <http://epic.er.doe.gov/epic/docs/bestpractices.pdf>

- ***IG Report:***

During calendar year 2004 the Inspector General conducted an audit of the Department's P2 Program. The review was conducted to determine if the Department has maintained an effective P2 program. Specific to NNSA, the review included IG personnel visits and interviews with HQ NA 3.6, the NNSA service center P2 staff, and site visits to LANL and SNL/NM. The Draft report on "The Department's Pollution Prevention Program" was issued January 14, 2005 and concluded that the Department has not maintained an effective P2 program. Recommendations from the draft report were:

- 1) Ensure that sites implement the P2 provisions of DOE Order 450.1, by:
 - a) Conducting operational assessments of site operations to identify opportunities for P2 projects and implementing those deemed cost-effective using life-cycle assessment concepts and practices;
 - b) Employing innovative strategies, such as waste generator's fees, to fund cost-effective P2 programs; and,
- 2) Develop and implement performance measures for P2 activities that reemphasize the program and hold managers accountable for implementation.

When the Report is finalized, NNSA will determine an appropriate response to address the findings and recommendations for NNSA operations.

- ***FY 2005 NNSA P2 Program Environmental Awards:***

For the second year, NNSA has conducted a P2 Program environmental awards program as part of and in support of the overall DOE P2 awards program conducted by HQ EH. A total of 21 nominations were received from NNSA sites for the FY 2005 DOE P2 awards process in six award categories for work done in FY 2004. The DOE award categories directly corresponded to the Office of Federal Environment Executive's White House Closing the Circle awards categories which included the following: Green Purchasing, Waste/Pollution Prevention, Recycling, Environmental Management System (EMS) (EO 13148), Sustainable Design/Green Buildings, and, Bio-based. Of the 21 NNSA nominations received there was 1 each in the Green Buildings and Bio-based categories; 2 in the EMS category; 5 in the Recycling category, and; 12 in Waste/P2.

NNSA chose 6 nominations to receive NNSA **Best-In-Class** Awards and 13 nominations to receive NNSA Environmental Stewardship Awards. The Best-In-Class award winners are (with Project title):

1. LLNL – Chemistry Environmental Services Low-Level Waste Stream Development
2. LLNL – LLNL Plutonium Facility Tilt Pour Furnace Process
3. Y-12 – Y-12 EMS Sustainability Initiative
4. Pantex – Pantex Environmental Partnerships
5. SNL/NM – Building 805 Decontamination Phase Recycling at SNL/NM
6. SNL/NM – Joint Computational Engineering Lab.- Sandia's First Green Building

The Environmental Stewardship Award winners are:

1. Pantex – Pantex Plant E-85 and Biodiesel Programs
2. LLNL – Use of Frangible Bullets at LLNL's Site 300 Firing Range
3. Y-12 – Y-12 Construction in Rad Areas Reduces Wastes and Costs
4. Y-12 – Y-12 Cross-Complex Nitric Acid Transfer Initiative
5. SNL/NM – Construction/Demolition Waste Recycling Center at SNL/NM
6. SNL/NM – Waste Reduction Techniques Applied to Landscaping
7. LANL – Rad Liquid Waste Treatment Facility Effluent Reuse/Recycling
8. LANL – LANL's Integrated Work Management Process and Job H
9. LANL – Oil-Free Vacuum Pumps
10. LANL – Redesigning a Weapons Component to Eliminate Beryllium Use
11. LANL – Rad Liquid Waste Generator Set-Aside Fund
12. LANL – Oversized TRU Waste Volume Reductions at DVRS
13. LANL – Reusable Containment Structures.

Information related to these specific projects can be found on the HQ EH reporting web site at: <http://www.eh.doe.gov/p2>, under the heading P2 Awards Programs.

- ***New P2 Program Goals:***

The current Secretarial Waste Reduction Goals expire at the end of FY 2005. HQ EH initiated several meetings over FY 2004 to begin the process to develop new P2 program goals that will be effective beginning in FY 2006. HQ EH stated that they intend to submit the newly proposed goals to the Secretary of Energy for approval. The draft goals have been distributed and commented on by the Field and are awaiting final approval by HQ EH. For information and planning purposes, Appendix C presents the current set of the Draft FY 2006 P2 goals.

- ***Environmental Management Systems (EMS) Implementation:***

DOE Order 450.1 requires sites to have EMS in place by 31 December 2005. Over the course of FY 2004 most NNSA sites have made significant progress toward meeting the 31 December 2005 due date for EMS implementation. The Kansas City Plant and Savannah River Site Tritium Operations are the only NNSA programs that currently have approved EMS in place. To have an approved EMS program using the “self-declaration” approach, sites must have completed one audit cycle and management review. The other approach is third party certification. Sites need to be cognizant of this requirement to ensure their EMS programs will be implemented by the due date. Fully implemented EMS programs at all the sites will help achieve the goals of the NNSA P2 program by minimizing the environmental impacts of DOE operations on the environment while continuing essential mission work, avoiding future legacy cleanup cost and liabilities, reducing overall operating costs, and enhancing worker and community safety.

- ***Site Waste Reduction:***

Sites must remain vigilant in their efforts to reduce routine waste generation. Highlighted below is a list of sites’ routine waste streams where FY 2004 performance is more than 10% below the 2005 NNSA goal threshold or re-negotiated baseline. Given the goals were established in 1999, sites should be within 10 % of achieving their target goals to be on track in meeting the Secretarial goals. Sites must remain focused on continuous improvement in reduction of all waste streams. With this being the final year to achieve the 2005 waste reduction goals, the listed waste streams should be noted as a concern:

- LLNL – LLW, HAZ
- LANL – TRU, LLW, and MLLW
- Nevada – Recycling rate
- Pantex – LLW, SAN
- SNL/CA – HAZ
- SNL/NM - MLLW, HAZ, and Recycling Rate
- Y-12 – LLW
- Bettis – SAN
- KAPL – LLW, MLLW and SAN

Section II. FY 2004 NNSA Pollution Prevention Program Site Summary

This section provides a summary and SC assessment of NNSA site P2 program operations, issues, and activities as noted by the SC. Sites were given an opportunity to review and provide comments for this Report. (Note: Not all sites generate all reported waste types, if a particular waste type is not highlighted in a specific site section it means that site does not have a baseline and therefore does not normally generate that waste stream).

Kansas City Plant

Introduction and P2 Program Budget

Pollution Prevention activities at the Honeywell, Federal Manufacturing and Technologies, Kansas City Plant (KCP) are an integral part of the continuous improvement initiatives undertaken in support of the plant's Environmental Management System. These initiatives provide a major contribution in meeting the Secretarial Goals for the plant's two reportable waste streams: hazardous wastes and sanitary waste. The KCP's FY04 budget for P2 was just over \$125,000. This only provides labor costs for P2 personnel. The P2 project implementation costs are the responsibility of the line management associated with the activity.

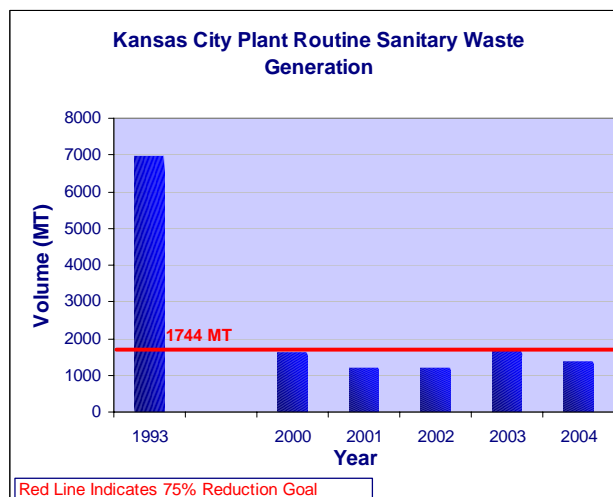
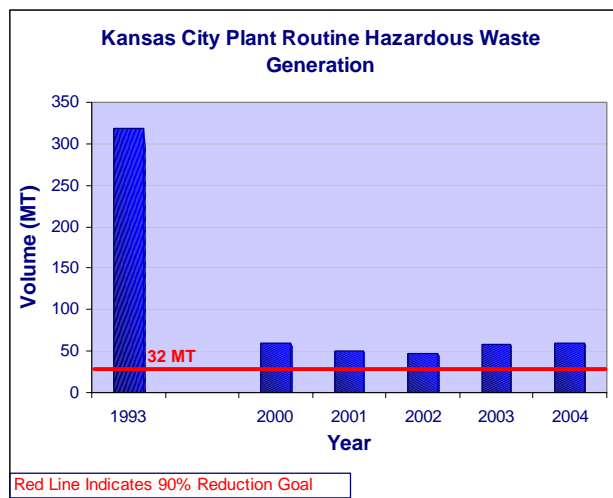
FY 2004 Routine Waste Reduction Performance (by waste type generated)

- **Hazardous Waste (HAZ)**

For FY04 the KCP generated 55.65 mt of routine hazardous waste (HAZ). This represents an 82.6% reduction compared with the plant's 1993 baseline generation amount of 319.3 mt of HAZ. Sludge from the KCP Industrial Wastewater Pretreatment Facility (IWPF) is the largest contributor to the HAZ generation (accounting for approximately 60% of the plant's routine hazardous waste.) The minor increase in HAZ reported from FY03 to FY04 was attributed to implementation of the KCP's 5-S Initiative (Sort, Store, Sweep, Standardize, and Sustain) that resulted in disposal of unused hazardous materials.

- **Sanitary Waste (SAN)**

For routine sanitary waste (SAN) generation, the KCP reported 1398 mt in FY04. This amounts to



an 80.0% reduction as compared with the plant's 1993 baseline of 6,974 mt for routine sanitary waste. The KCP's reported sanitary waste generation includes SAN generated from routine operations at the Honeywell Kirtland Operations Facility located in Albuquerque, NM.

FY 2004 Recycling and Affirmative Procurement Performance

The KCP generated 11,514 mt of sanitary waste from all operations (both routine and Cleanup/Stabilization). They recycled over 7,615 mt of this waste to achieve a recycling rate of 66.1 % in FY04.

The KCP achieved a 100% affirmative procurement rate with purchases of materials with recovered content totaling over \$6,096,000. The goal is achieved with the active involvement of the KCP Affirmative Procurement Officer to continuously review products in the KCP inventory for opportunities to designate items with recycled content. The KCP also provides extensive training to new Buyers focusing on affirmative procurement.

Environmental Management System Implementation Status

The Honeywell Federal Manufacturing and Technologies, Kansas City Plant (KCP) achieved full ISO 14001 certification in FY97. KCP has maintained this certification by successfully completing an ISO 14001 Certificate Extension Audit in May 2003.

Outreach Activities and Awards

The KCP actively participates in a multitude of Community Outreach Programs. These activities include:

The Environmental Excellence Business Network (EEBN): A Honeywell employee serves on the Steering Committee of the EEBN. This organization is a local group of industry environmental professionals working together to help businesses manage environmental issues and have a positive impact on the environment.

Blue River Watershed Association (BRWA): The BRWA is a local organization that enhances community awareness relative to keeping waterways clean through educating students and conducting river monitoring and cleanup events. A Honeywell employee serves on the BRWA board of directors.

Clean Streams 2004: Clean Streams 2004, an event sponsored by BRWA and Honeywell marked the sixth year KCP employees had an opportunity to spend the day cleaning up the watershed and learning more about environmental issues.

P2 Program Best Practices (PPOA's and Projects)

In FY04 the KCP completed a Beryllium (Be) decontamination project of their Department 21's Flexible Manufacturing System. This project was undertaken to minimize employee exposures, minimize departmental contamination, and prevent the spread of Be throughout the rest of the KCP. This project (with total project costs of just over \$287,000) resulted in controlling Be contamination in the machining fluids to under 15 parts/billion, avoiding the spread of

contamination outside of the department, as well as maintaining machining fluid quality for 24 months (thus helping to reduce the generation of hazardous wastes).

Lawrence Livermore National Laboratory

Introduction and P2 Program Budget

The Lawrence Livermore National Laboratory (LLNL) P2 program focuses on scientific and operational practices that integrate pollution prevention, efficiency in the use of materials and energy, and the use of sustainable design in support of the Laboratory mission. The P2 program was budgeted in FY04 at approximately \$610 thousand dollars, which provides the salaries for four FTE's. Additional funding for P2 related activities is provided by lab programs as part of the overall maintenance and operations budget and is not tracked to any specific Program Secretarial Office. The FY05 budget may be subject to an 8% reduction.

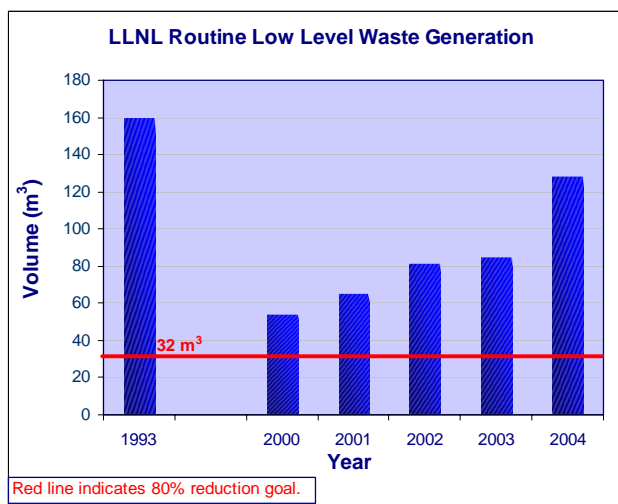
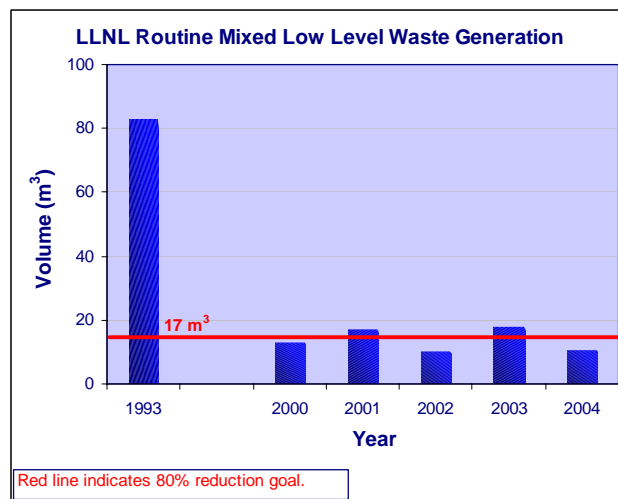
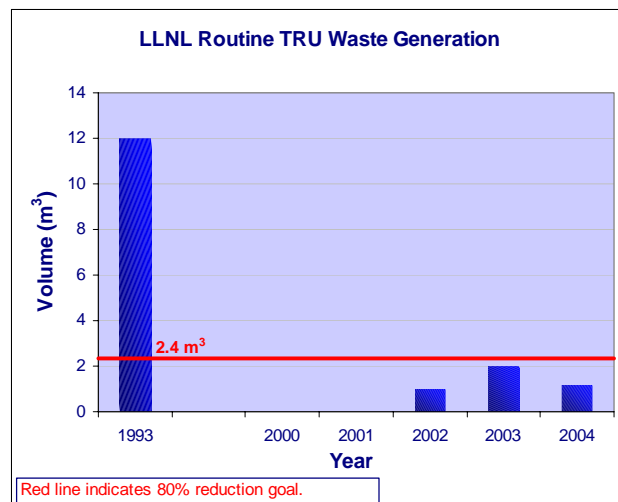
FY 2004 Routine Waste Reduction Performance (by waste type generated)

- **Transuranic Waste (TRU)**

The LLNL generated 1.16 m³ of TRU in FY04, resulting in a 90.4 % reduction for this waste stream (based on a 1993 baseline of 12 m³). LLNL provided funding for one project in FY04 to help reduce the generation of TRU waste and MLLW. The Accelerated Solvent Extraction Unit has the potential to eliminate 1 kg of TRU waste. An additional project, the Mass Spectrometric Detector for Ion Chromatography System, was identified (but not funded) in FY 04. This project has the potential to eliminate the generation of 0.019 mt of TRU waste.

- **Mixed Low-Level Waste (MLLW)**

LLNL reported MLLW generation of 10.55 m³ in FY 04, achieving an 87.3% reduction (based on a 1993 baseline of 83.3 m³ of MLLW.) The Accelerated Solvent Extraction Unit was funded in FY04 and can potentially eliminate up to 0.23 mt of MLLW. A second project, the Flow-through Radionuclide Detector, was also funded in FY 04 with the potential to eliminate 0.20 mt of MLLW.



- **Low-Level Waste (LLW)**

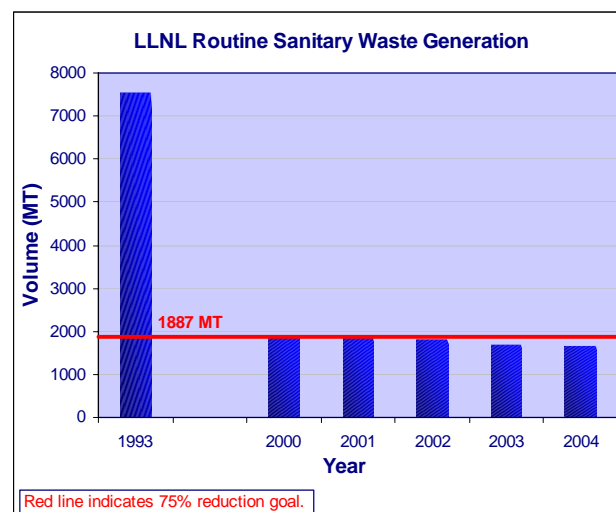
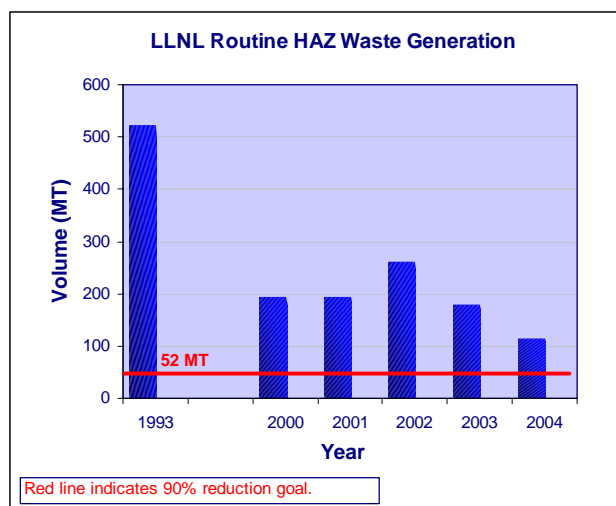
The biggest challenge for LLNL continues to be reduction of Low-Level Radioactive waste generation. The laboratory generated 128.3 m3 of LLW in FY04, which equates to a 20% reduction of LLW, compared with the lab's 1993 baseline of 160.3 m3 for LLW. The increase in LLW since 2000 is primarily due to the operation of the Site 300 Contained Firing Facility. The facility began operations in 2001 with some outdoor test activities moving inside. This resulted in less ambient pollution but additional waste due to cleaning of the containment vessel between experiments. To help reduce this waste stream, the lab continues to focus attention on the explosive test facility decontamination process, Site 300. This activity generates significant amounts of LLW from both the disposal of test apparatus and the use of Personnel Protection Equipment (PPE).

- **Hazardous Waste (HAZ)**

Hazardous waste (HAZ) also presents one of the bigger challenges for the lab to meet the 2005 Secretarial Goal of 90% reduction. LLNL generated a total of 115.5 metric tons (mt) of HAZ waste, comprised of both RCRA and State regulated wastes. This equates to a 78% reduction, compared with the 1993 baseline of 523.9 mt for this waste stream. To help achieve greater reduction of HAZ stream, the lab implemented several activities in FY04. One of the larger waste stream results from machining operations. LLNL has begun use of new non - hazardous coolants for longer sump life, and the use of portable recycling/reconditioning units to extend the product's useful life. These activities, in conjunction with improved management (testing and replenishing techniques) of coolants, should provide some relief for HAZ waste generation. LLNL also evaluated a "green cleaners" program with the janitorial group in 2004.

- **Sanitary Waste (SAN)**

In FY04, LLNL reported 1675 mt of routine sanitary waste. LLNL achieved a 78% reduction of this waste stream in FY04, compared with the lab's 1993 reported baseline generation of 7,548 mt. Waste resulting from Clean Up/Stabilization (C/S) activities was reported at 1175 mt during FY04.



FY 2004 Recycling and Affirmative Procurement Performance

The laboratory continues to actively recycle as much of the sanitary waste as possible (both routine and C/S) and this year recycled over 2850 mt—achieving an impressive recycling rate of 85.5%! Recycling at the laboratory initially began with recycling office paper but has been expanded to now include cardboard, phone books, newspapers, toner cartridges, computers/electronics, steel, copper and other precious metals, engine oil, antifreeze, wood, soil, food wastes and other waste streams. Recycling contracts and sales have been established for a wide range of lab-generated waste including lead and other scrap metals, baled paper and used tires from Fleet Management and Heavy Equipment. Other recycling includes (in addition to donations to local schools) air conditioners, pumps, and refrigerators. Landfill recycling is also performed. Asphalt and concrete are transported to the landfill where they are processed for recycling. Clean soil is also transported to the landfill and is used to cover garbage.

LLNL achieved an (adjusted) Affirmative Procurement Rate of 100% with purchases of materials with recovered content totaling over \$1,102,000. For some product categories, including carpet, floor tiles, and picnic tables and benches, LLNL procured 100% of items with recycled content. LLNL has made it difficult to order copy paper without recycled content. The lab has also signed procurement contracts with “Office City Supplies” that requires recycled and post-consumer content for plastic trash bags, corrugated boxes, facial tissues, and industrial wipes.

Environmental Management System Implementation Status

ISO 14001 will be used as part of the EMS Implementation at LLNL. A gap analysis of LLNL's current ISMS against ISO 14001 was finalized in May 2004. LLNL's environmental policy was issued in July 2004. The gap analysis demonstrated that the existing LLNL ISMS had the required EMS elements and procedures sufficiently implemented to meet the ISO 14001 elements; however, improvements throughout the ISMS were needed to ensure LLNL's ability to self declare full EMS implementation (currently targeted for September 2005).

Outreach Activities and Awards

The Earth Expo Event is a long-standing tradition at LLNL. This event, held in April each year in celebration of Earth Day, hosts a variety of Laboratory exhibitors and agencies offering informational displays for LLNL staff and their guests. In addition to many P2 related demonstrations, a presentation discussing the disposition of waste electronics shipped overseas was shown at the lab.

LLNL also maintains a P2 Web Page as a resource for laboratory employees. The web page was recently expanded to include new information regarding Sustainable Business-Pollution Prevention concepts. LLNL plans in the future to provide a modified version of the P2 web page (outside the LLNL firewall) for use by the general public.

P2 Program Best Practices (PPOA's and Projects)

In 2004, LSO funded the Accelerated Solvent Extraction (ASE) system. This system replaces the manual ultra sonic extraction procedure. The auto-sample capabilities of this system reduce solvent requirements to about 15 ml per sample—compared with as much as 400 ml required by the manual extraction technique. This will help reduce the generation of the laboratory's routine TRU waste and MLLW. This system will also provide a time and labor saving benefit, allowing for extraction of up to six samples simultaneously. There is reduced employee risk for exposure to solvents because this system's analysis is carried out in a closed vessel.

In 2004, LLNL demonstrated the feasibility of the Plutonium Facility Tilt Pour Furnace process. In addition to being a significant contribution to the overall DOE mission, this process, scheduled for deployment as part of DOE's Modern Pit Facility, will greatly reduce the generation of TRU wastes. By enabling the reuse of ceramic crucibles necessary for the old stationary furnace pyrochemical operations, a 50% reduction of the lab's TRU waste generation associated with this activity is expected. Because "hands-on" operations are minimized with this new process, worker radiation exposures will also be significantly reduced.

The reduction of mixed low-level waste generation is also a priority of the lab's P2 mission. In an effort to reduce the lab's generation of MLLW, LLNL's Chemistry Environmental Services instituted a "Certified Low Level Waste Stream". The certified waste stream was developed using strict identification, segregation, and management of both acutely and extremely hazardous material containers. The process relied heavily on the development of a simple, cost-effective, yet rigorous characterization strategy in conjunction with the implementation of an enhanced training program for LLW stream generators. The implementation of this process is estimated to result in the diversion of 44% of the lab's MLLW to LLW, resulting in significant waste management cost savings. The process will also result in significantly reduced personnel exposures to MLLW.

Los Alamos National Laboratory

Introduction and P2 Program Budget

The Environmental Stewardship Division (ENV) at Los Alamos National Laboratory (LANL) has responsibility for implementation of a laboratory-wide P2 Program. The LANL program focuses on P2/waste minimization, upstream process change, affirmative procurement, sustainable building design, and energy and natural resource conservation. The FY04 P2 Program budget was just over \$3.3 million—including \$685,000 in Generator Set Aside Funding (GSAF). The FY05 LANL budget is expected to be \$2.45 million reflecting a 33% cut in RTBF (Readiness in Technical Base and Facilities) funding and no funding for special projects as had occurred in previous years. The FY05 budget will include GSAF totaling over \$1 million—including GSAF funding from Radioactive Liquid Waste (RLW) generators for the first time. LANL generates significant amounts of routine low-level radioactive (LLW) and mixed low-level radioactive (MLLW) waste as byproducts of research and development (R&D) activities and production. The lab also produces hazardous (HAZ), sanitary (SAN), and transuranic (TRU) waste. The Laboratory documented pollution prevention efforts in their Pollution Prevention

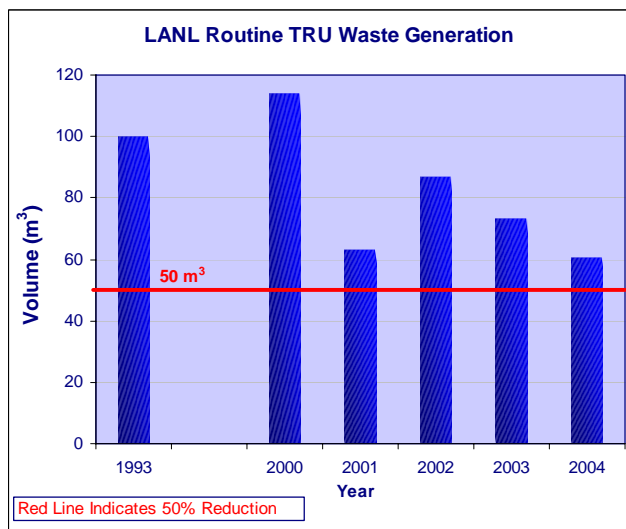
Roadmap for 2004. This document, which meets New Mexico State regulatory permit requirements, describes the pollution prevention program activities and the processes used to define and implement environmental improvements at the laboratory.

FY 2004 Routine Waste Reduction Performance (by waste type generated)

- **Transuranic Waste (TRU)**

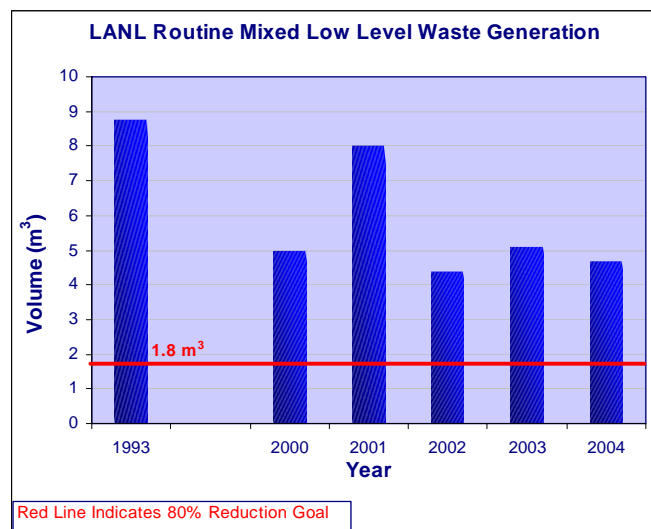
The reduction of routine transuranic (TRU) waste continues to be the biggest challenge for the lab. In FY04 LANL generated 60.7 m³ of TRU waste. This constitutes a 40% reduction of TRU waste compared with the modified baseline of 100 m³ (in 2002 the laboratory and DOE agreed on a modification to the baseline based on TRU waste generation for FY96 thru FY99. This period represented the years that Nuclear Materials Technology operations were fully operational for the entire year-thus providing a more representative baseline for the generation of TRU waste at the lab). Further, LANL has significantly ramped up nuclear activities, such as pit production, during the intervening years.

The lab has proposed several activities that should provide reduction in TRU waste generation (source reduction) and in amounts of TRU wastes shipped offsite. One project, the Small Scale Granulator and Compactor for PF-4 TRU Waste, proposes to use waste minimization to reduce the volume of the current inventory of radioactive-contaminated plastic bottles and ceramics by at least 60%. During FY04 this project has been tested for use in an existing glovebox at TA-55. Additionally, P2 at LANL has funded the fabrication, testing and installation of a vitrification process for the TRU waste that is currently solidified with cement. This activity, currently awaiting final approval, will produce waste drums certifiable to Waste Isolation Pilot Plant and is expected to reduce the generation of TRU/MTRU cemented waste.



- **Mixed Low-Level Waste (MLLW)**

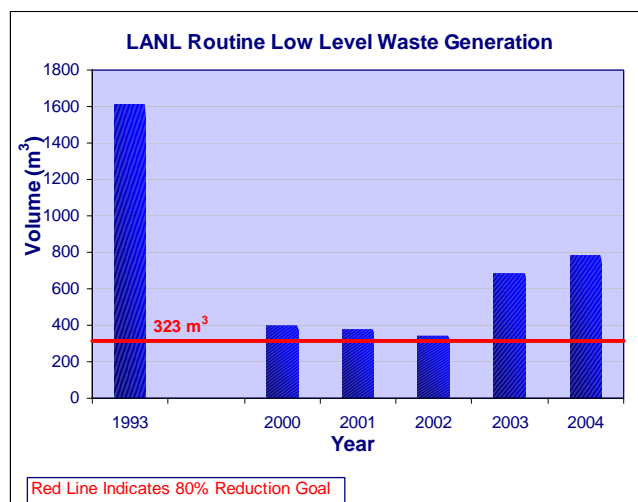
LANL generated 4.7 m³ of MLLW in FY04. This equates to a 46.4% reduction compared with the 1993 baseline generation of 8.77 m³ of routine mixed low-level waste. Due to the low generation rate during the 1993 baseline year, achievement of the Secretary's Goal of 80% reduction of MLLW generation will be extremely challenging for the lab. Nearly half of the current MLLW volume is generated by personnel bioassay testing for both safety and security programs. LANL is implementing a new treatment project that will eliminate the nitrate from this waste stream (thus providing some relief in LANL's efforts to reduce the amount of



MLLW generated by the lab.) This project was funded with FY03 GSAF funds. The laboratory is also working with the other large generators (including the Nuclear Materials Technology (NMT) and the Chemistry (C) divisions) to focus attention to reduce this waste stream. One project involves enhanced sorting, segregation, recycle, and reuse of electronic equipment from inside radiation control areas (RCA's). Miscellaneous electronic equipment that is excessed from RCA's is disassembled and the individual components are surveyed. Those components that are non-radioactive are recycled. It is estimated that this project avoids up to 10 cubic meters of MLLW annually.

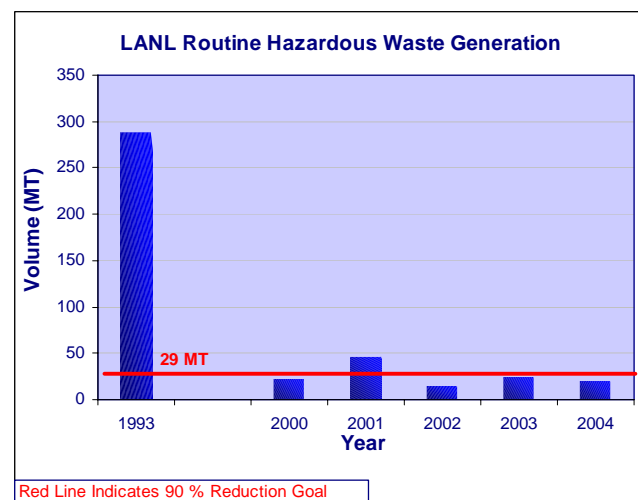
- **Low-Level Waste (LLW)**

The reduction of routine LLW radioactive waste continues to be a challenge for the laboratory. In FY04, the laboratory generated 787 cubic meters (m3) of routine low-level radioactive waste. This equates to a 51.2 % reduction compared with the 1993 baseline generation of 1613 m3 of LLW. Many one time activities conducted during FY04 contributed to this increase, including closure of the Tritium Systems Test Assembly facility, disposal of drums previously contaminated with TRU waste, and an increased volume of one-time waste from the radioactive liquid waste treatment facility resulting from an excessed facility and returned treated waste requiring disposal. LANL has also documented that increased workload in the NNSA weapons programs and the increased staff working on these programs have heavily contributed to the increases in these waste streams. For example, the initiation of weapons program hydrodynamic testing with requirements for beryllium abatement added over 220 m3 of new LLW during the year. FY04 GSAF funding was used to demonstrate the use of reusable containment tents in the Nuclear Materials Technology (NMT) Division. This system was used to prevent contamination from spreading during equipment change out within a glovebox. The reusable tent provided advantages over the wood and plastic tents previously used, including, reduced labor, superior containment of contamination, and reduced low level waste generation. This system is quicker to deploy and remove; therefore there is less disruption of normal operations. Additionally, the P2 program has actively worked with the hydrodynamic testing program to develop a new beryllium abatement system that should cut LLW by 80% in future shots.



- **Hazardous Waste (HAZ)**

For FY04, LANL generated 19.1 metric tons (mt) of routine hazardous waste. This represents an impressive 93.4% reduction compared with the 1993 baseline of 288.42 mt. LANL has aggressively pursued reduction of the laboratory's HAZ waste stream over the years. One project during FY04 focused on reducing organic hazardous

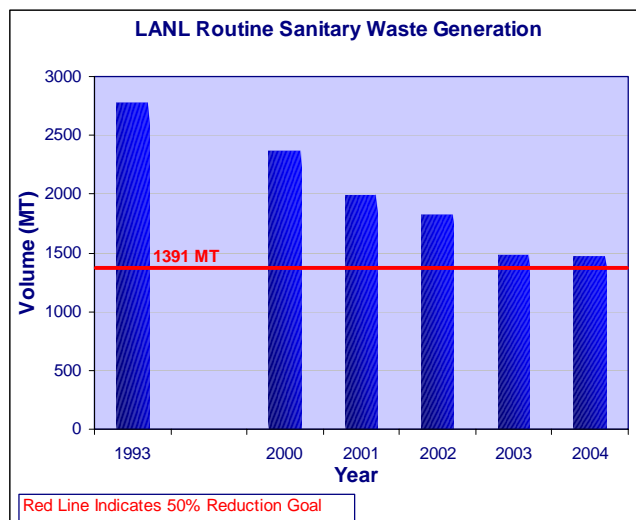


materials at the lab. This activity was funded with FY04 GSAF funds and involved the installation of a pyroclean oven within the Chemistry Division. This laboratory previously generated large amounts of glassware contaminated with HAZ. Solvents and oxidizing agents were used to clean the glassware. This new system uses high temperatures to remove the hazardous residues eliminating a hazardous waste stream and reducing worker exposure to hazardous materials. Also in FY04 LANL completed an extensive study of perchlorate use at the lab to identify measures to reduce this waste stream. This waste stream is receiving enhanced attention from the State of New Mexico as of result of concerns over groundwater contamination. In addition to perchlorates role in the generation of routine hazardous waste, LANL is aware of legacy waste issues associated with this waste in groundwater's underlying the laboratory. This waste plume has the potential to affect both the local aquifer system as well as drinking water systems as far south as Santa Fe, New Mexico and the Rio Grande Water system.

- **Sanitary Waste (SAN)**

LANL generated 1476 metric tons of routine sanitary waste (SAN) in FY04. This equates to a 47% reduction for SAN based on the lab's 1993 baseline generation amount of 2781 mt's. In 2002 LANL and DOE agreed to a modified goal for SAN reduction of 50%, based upon a detailed engineering analysis of the laboratory's sanitary waste generation.

LANL is committed to sanitary waste reduction by continued commitment to aggressive waste minimization programs including recycling of white paper, junk mail, colored office paper, catalogs, cardboard, and pallets. The top three waste types in the SAN waste profile include paper, equipment/other, and cardboard. The lab has increased outreach and awareness efforts to increase employee's use of the existing recycling centers. The lab's existing "Stop Mail" program will be expanded to provide additional source reduction. This program has been successful in reducing the amount of junk mail delivered to the lab.



FY 2004 Recycling and Affirmative Procurement Performance

LANL reported a recycling rate of 66.5% for FY04. This recycling rate was achieved by the laboratory recycling a total of 3,857 mt of all SAN (both routine and Cleanup/Stabilization waste totaling 5,799 mt)

LANL has an ongoing program for increasing the purchasing of items identified in the EPA's Consumer Procurement Guidelines (CPG) also known as affirmative procurement. LANL had purchases of items listed in the CPG for FY04 totaling \$1,574,102. Of these purchases, \$1,234,680 met the CPG requirements for recovered content. This equates to 78% of site-wide purchases (non adjusted) meeting the requirements for recovered content. LANL reported 100% of adjusted purchases meeting requirements for recovered content.

Environmental Management System Implementation Status

LANL has committed to implementing a site-wide Environmental Management System by December 2005. There were several activities completed in FY04 that should ensure the laboratory would meet the mandated implementation deadline, including the addition of the EMS process to the LANL Director's Operational Efficiency Initiative. This conveys institutional status for EMS implementation. A schedule and timeline for the lab-wide EMS implementation was also completed. Additionally, LANL completed an ISO 14001 based Gap Analysis for the environmental aspects of the lab's P2 program components. LANL is actively integrating P2 into the development and implementation of its EMS and using tools such as PPOA's and GSAF funding to facilitate the EMS.

Outreach Activities and Awards

LANL staff members are actively involved in pollution prevention outreach activities. The P2 manager serves on the Governing Board of the Green Chemistry Institute and is also a member of the US Green Building Council. Three LANL team members participate in the New Mexico Recycling Coalition (with one member serving on its Board of Directors.) Two team members serve on the Los Alamos County Solid Waste Advisory Board (including one currently serving as vice chairperson). Additionally, in FY 04 the LANL P2 team worked with the Pajarito Environmental Education Center to cosponsor Earth Day activities for the community.

The LANL ENV Division and the Associate Director for Technical Services hosted the Annual LANL Pollution Prevention Award Ceremony as part of their Earth Day 2004 celebration. This annual event encourages LANL employees to submit ideas that can be easily implemented to achieve reduction in waste generation. If an idea is selected, employees receive recognition at this annual ceremony from LANL management as well as a monetary award (typically between \$50 - \$100). For FY04 the results included:

- * 30 awards were given
- * 229 individuals were recognized
- * 23 divisions were represented
- * 7 contract organizations were represented

The total estimated savings to LANL and the NNSA were **\$2,274,274**. The two-year total savings for this program are greater than \$7 million dollars.

LANL was also the winner of two NNSA FY 2004 Best-In-Class Environmental Stewardship Awards. The selected projects were "Formamide Replacement in Genetic Sequencing" submitted by the laboratory's "B Division" and "Pollution Prevention at the Heavy Equipment Maintenance Shop" by a team from KSL Services. Each of these projects will help reduce the laboratory's generation of hazardous wastes.

P2 Program Best Practices (PPOA's and Projects)

A study of hazardous chemical usage at Los Alamos, evaluated hazardous chemical usage/disposal at the Laboratory. Five categories of hazardous substances were considered,

banned, persistent bioaccumulative toxins (PBT), extremely hazardous substances (EHS), carcinogens, and teratogens. This study recommended the following actions:

1. Obtain a current inventory of all the hazardous chemicals listed in the five categories.
2. For the substances having the largest inventories, investigate the processes that use the chemicals.
3. Develop chemical management or elimination plans, where possible, for processes that use these chemicals.

Based on these actions, a project plan was developed and this project is also part of the Director's Operational Efficiency Program. The tasks/milestones have been identified for implementation in FY05.

Nevada Site Office/Nevada Test Site

Introduction and P2 Program Budget

The NNSA Nevada Site Office (NSO) has implemented a pollution prevention program that is a combined effort of one NSO federal staff member and contractor support including Bechtel Nevada (BN), Stoller-Navarro Joint Venture (SNJV), and Wackenhut Services Inc (WSI). During FY04, the Nevada Site Office (NSO) spent \$30,000 in FY03 EM P2 carry-over funds and \$214,000 in FY04 EM Program Integration funds. These funds included labor costs for one full time BN staff member as the NSO P2 Integrator and a part-time P2 Advocate at SNJV. For FY05, NSO has only budgeted \$30,000 of EM Program Integration funds to fund the SNJV part time P2 Advocate. No funding was identified for the NSO P2 Program Integration scope for integrating the P2 activities of the various contractors into one Site-wide P2 Program. As a result, the BN P2 staff member, previously performing Site P2 Integration tasks, has been reassigned to BN Environmental Services, in order to support P2 planning and implementation of BN's P2 program and other environmental programs, through indirect funds.

BN managed the site-wide waste disposal and waste generation reporting program. BN also managed the site-wide recycling and material exchange programs. These programs were funded through BN indirect funds. Although BN has stated that the material exchange program will continue to be funded through FY05 (with BN indirect funds), the recycling program may not receive funding in FY05 and beyond due to pressure to reduce the overall BN indirect budget. WSI P2 activities were funded through WSI indirect funds. WSI provides annual input to the ES&H Management 5-Year Plan and this includes pollution prevention activities. P2 implementation costs were integrated into the appropriate program/project budgets.

FY 2004 Routine Waste Reduction Performance (by waste type generated)

- **Hazardous Waste (HAZ)**

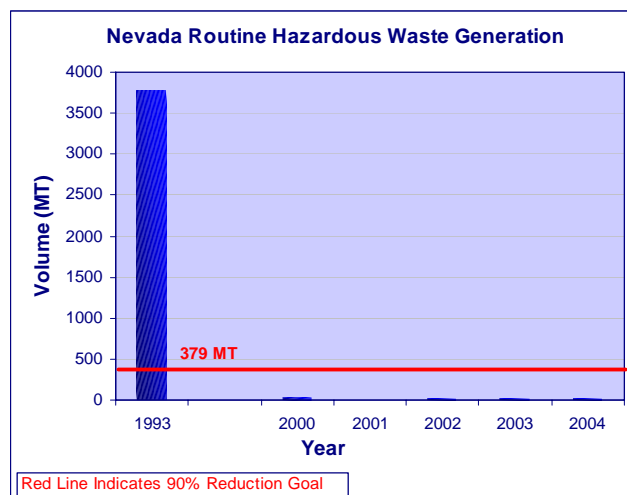
In FY 04, the Nevada sites generated 15.05 metric tons (mt) of routine Hazardous waste, a 99.6% reduction from the 1993 baseline.

- **Low-Level Waste (LLW)**

The 1993 baseline for routine Low Level Waste (LLW) is 0 cubic meters. No LLW was generated by NV sites for FY04.

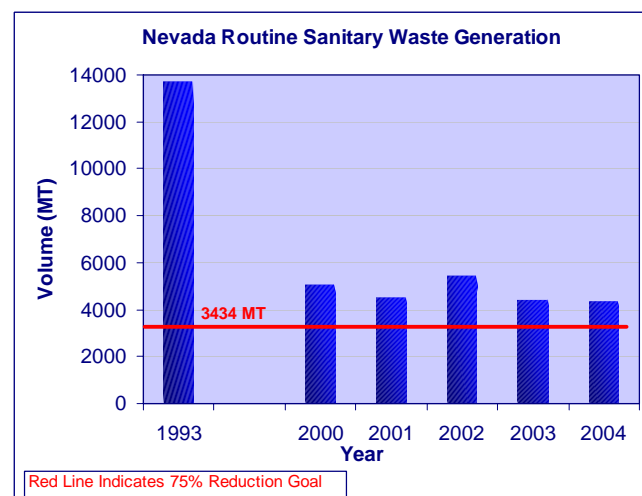
- **Mixed Low-Level Waste (MLLW) and Transuranic (TRU) Waste**

The 1993 baseline for Mixed Low Level Waste (MLLW), and Transuranic Waste (TRU) are also 0 cubic meters. The Nevada sites did not generate any of these wastes in FY 04. In FY 05, it is anticipated that the JASPER project will increase operations and may generate routine TRU waste. As a result, the Nevada sites will actually increase the generation of LLW and TRU waste streams in FY 05 and beyond. No generation of MLLW is anticipated at Nevada sites.



- **Sanitary Waste (SAN)**

The Nevada sites generated 4,383 mt of routine sanitary waste in FY04. This is a 68% reduction from the 1993 baseline for routine sanitary waste (SAN). The Nevada sites generated 18,535 mt's of sanitary waste from all operations (both routine and Cleanup/Stabilization waste) in FY 04.



FY 2004 Recycling and Affirmative Procurement Performance

One thousand, five hundred and fifteen metric tons of Nevada's SAN waste was recycled in FY04 resulting in a 12% recycle rate, well below the DOE's FY05 goal of 45%. BN has committed to continue supporting the Material Exchange program; however, as a result of reduced P2 funding in FY05 and beyond, the possible elimination of paper, plastic, cardboard, food waste and aluminum can recycling at the NTS may reduce the Nevada site's future recycling performance even further.

In the area of affirmative procurement for FY 04, 77.5 % of Bechtel Nevada's (BN) total purchases of EPA-designated items met the requirements for recycled content, except when not available competitively at a reasonable price or that do not meet performance standards. SNJV does not have a contractual requirement for an affirmative procurement program; however, they have committed to purchases recycled content material whenever practicable. No FY 04 affirmative procurement information is available for NNSA/NSO or Wackenhut Services Inc (WSI).

Environmental Management System (EMS) Implementation Status

BN has included the EMS on the agenda of the site's Integrated Safety Management (ISM) Council (which consists of representatives from NNSA/NSO, subcontractors, and NTS tenants) to ensure the implementation of a site-wide EMS by the 2005 implementation date. BN is implementing an EMS using the DOE Order 450.1 guidelines, and assisting the ISM Council members in their EMS implementation.

Outreach Activities and Awards

The BN P2 program has extensively used the monthly employee newspaper, "Site Line" to reach employees about P2 program initiatives and activities. Articles were published highlighting Nevada's Affirmative Procurement program. Additional articles were published related to Nevada's recycling program. These articles focused on educating employees on their mandatory requirements for participation in the site-wide recycle program and the benefits of the unique capability established with the NTS Food Recycling Program. Other articles highlighted improvements to the Material Exchange Database and successes with the database after the closure of the North Las Vegas B Buildings.

The NNSA/NSO federal and contractor employees have established an ongoing community outreach program to support the local St. Jude's Ranch for Children (a shelter for abused, abandoned, and neglected children). Employees collect used greeting and holiday cards and donate them to the shelter as part of their "Born Again" Greeting Card activity. The recycled cards are used by the children to make cards for sale in the shelter's gift shop. For every 1000 cards collected and recycled, approximately \$100 is returned to the Ranch.

NNSA/NSO participated in Earth Day activities at the Las Vegas Natural History Museum and at the University of Nevada Las Vegas (over 1400 elementary school students participated in the UNLV activities). The kids participated in short discussions on recycling. The exhibits included an interactive, 3-D comic-book feel walkthrough display briefly explaining the history of the NTS and emphasizing efforts to restore the natural environment of the site. The kids were given Earth Day bookmarks, recycled plastic rulers, coloring/activity books on recycling facts/tips, and pencils made with reclaimed denim.

P2 Program Best Practices (PPOA's and Projects)

The Joint Actinide Shock Physics Experimental Research (JASPER) Facility is a multi-organizational research facility hosting LLNL (responsible for project management), LANL, SNL, BN, and the NNSA. JASPER experiments support the NNSA Stockpile Surveillance program. A waste minimization assessment was conducted during the design phase of the gas gun, resulting in a significant reduction in TRU waste generation and the elimination of mixed waste and low-level waste generation.

In FYO4, a Pollution Prevention Assessment was conducted on BN's Environmentally Preferable Purchasing (EPP) program. This assessment focused on three areas of the BN EPP program, including: Company Directives/Procedures, the procurement process, and tracking/reporting. The assessment recommended the establishment of an EPP Advocate. The

EPP Advocate would help to ensure EPP program requirements are met as well as helping to ensure the accuracy of the data generated by the automated procurement system.

A Pollution Prevention Assessment was also performed focusing on Operational Security (OPSEC) and Recycling. This assessment focused on determining how much sensitive material is generated and disposed in the Nevada Test Site (NTS) solid waste landfill that could be shredded and recycled instead. The assessment was also used to determine the prevalence of sensitive information being placed into recycle containers throughout the site. The assessment issued the recommendation that NNSA/NSO establish a site-wide policy to require all paper waste to be shredded. An additional recommendation was highlighted that BN should establish a subcontract with a local shredding company to provide on-site shredding and recycling of paper waste streams for the entire Nevada site.

Pantex Plant

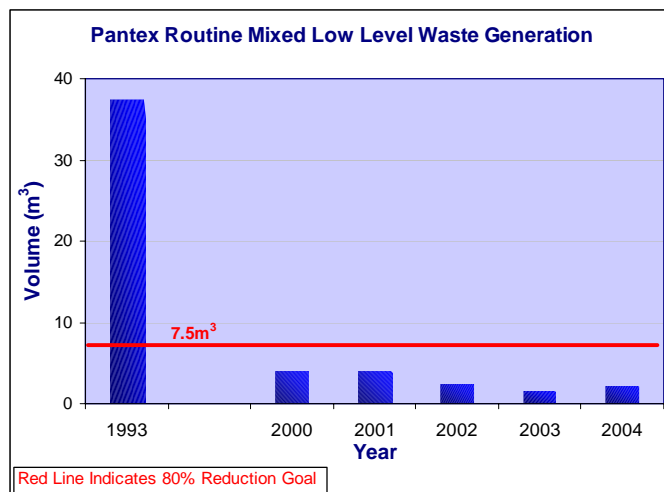
Introduction and P2 Program Budget

The Pantex Plant (PX), operated by BWXT maintains an active P2 Program. The FY04 budget was \$515,955 dollars. This included \$508,455 of P2 Base funding and \$7,500 earmarked for Project funds. This base funding supported 3.4 FTE's at PX. The FY05 Budget is estimated at \$523,686 and Project Funds of \$10,000. Project dollars are used to fund low cost employee suggestion program projects. Base funding is used for supplies, travel and registrations, and salaries for the P2 staff. Pantex line organizations or groups are responsible for funding implementation of specific P2 projects.

FY 2004 Routine Waste Reduction Performance (by waste type generated)

- **Mixed Low-Level Waste (MLLW)**

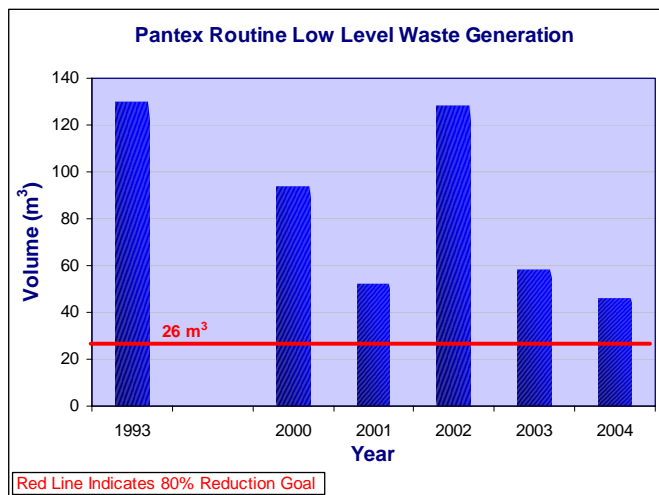
PX generated only 2.16 m³ of mixed low-level waste in FY04. This constitutes a 94.2 % reduction based on a 1993 baseline generation of 37.5 m³ of MLLW. Major challenges for maintaining this low MLLW generation rate include component disposition activities associated with Neutron Generators. PX has performed a PPOA within this area and 8 – 10 options were identified as a result of this PPOA. The option chosen included segregation and recycling of materials to minimize the generation of the mixed waste. The PX P2 staff plans to work closely with the component disposition group in the future. Sanitization of components continues to pose challenges to maintaining the low MLLW generation rates. It should be noted that the volume of MLLW generated at PX in any given year is largely dependent upon the number and type of weapons systems being maintained, dismantled, or



sanitized during that year. Because of this, comparisons between years based on waste generation alone may not provide an accurate representation of P2 progress.

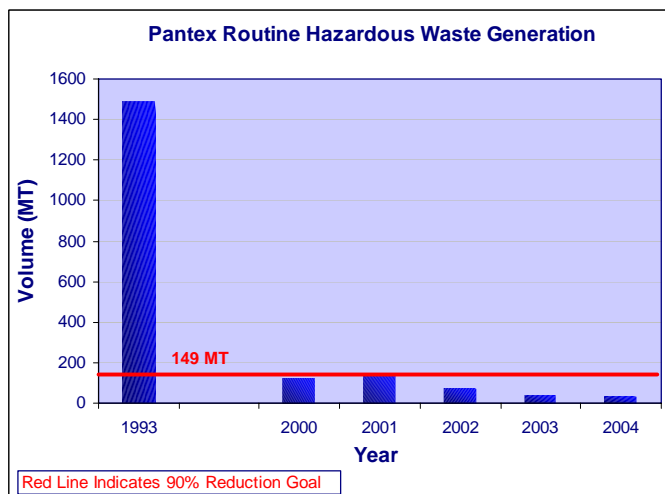
- **Low-Level Waste (LLW)**

PX generated 46 m³ of LLW in FY04. This equates to a reduction of 64.6% based upon a 1993 baseline of 130 m³. The major challenges for this waste stream are similar to those identified for MLLW generation. As part of component disposition activities associated with neutron generators (NG), LLW is produced. Other significant contributors to the generation of LLW include: scintillation glass vials used as part of the rad control activity and DMSO that is used for explosive dissolution as part of weapons dismantlement. A PPOA has been performed on the scintillation vial activity and recommendations from that activity are being evaluated by the line organization. It should be noted that the volume of LLW generated at PX in any given year is largely dependent upon the number and type of weapons systems being maintained, dismantled, or sanitized during that year. Because of this, comparisons between years based on waste generation alone may not provide an accurate representation of P2 progress.



- **Hazardous Waste (HAZ)**

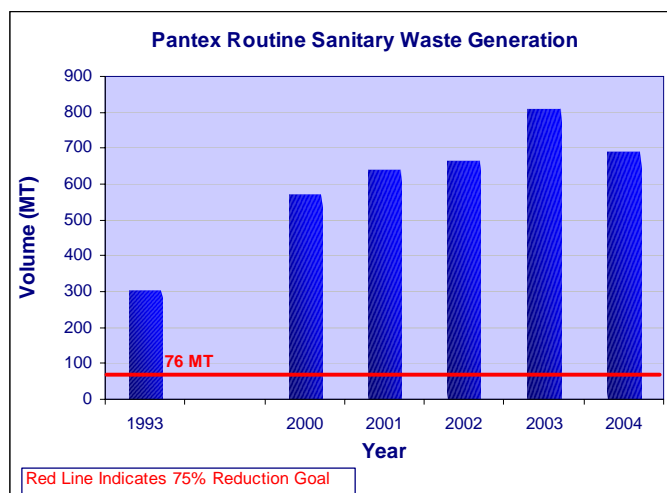
PX generated 29.92 mt of HAZ in FY04. This constitutes a 98% reduction based upon a 1993 baseline of 1,492.6 mt. The challenge to further reduce HAZ waste deals with the fact that low cost projects have been implemented. Further reductions are possible but would require additional funding. The major processes at PX that contribute to the HAZ waste stream include HE Synthesis and photographic processing. There is a large variation in the types of solvents associated with HE synthesis. This provides challenges to recycling efforts. The waste associated with x-ray development is also a challenge to deal with. One option being considered is switching to digital x-ray technology, which would eliminate x-ray film development and the resulting hazardous waste streams.



A PPOA was done in the Guard Force Weapons Training area. The lead sludge generated from indoor bullet traps during firearms training is one of the larger contributors to the hazardous waste stream. The PPOA identified potential lead sludge recycling options to help reduce this waste stream.

- **Sanitary Waste (SAN)**

The PX plant reported a generation of 690 mt of SAN in FY04. The 1993 baseline for PX's sanitary waste stream is 304 mt. PX's sanitary waste issue is made complicated due to the way in which the baseline year volume of sanitary waste was originally calculated. When the baseline was established, Class I and Class II non-hazardous waste were not included. In addition, waste going into the PX on-site landfill was not tracked in 1993. Thus, these waste types are not included in the 1993 baseline, but are included in current sanitary waste totals. If the Class I, Class II and on-site landfill wastes had been included in the 1993-generation volume, the baseline for sanitary waste would have been approximately 838 metric tons.



Additional challenges for PX include the low cost of SAN disposal (currently \$21/ton) and the high cost of recycling. Recycling is also problematic due to the limited availability of local recyclers. Major waste streams at PX include cardboard and cafeteria waste. A PPOA and Return On Investment study on the Cafeteria waste was performed. The PX cafeterias currently use disposable plates and utensils. A project to upgrade the cafeteria dishwashers and restock the cafeterias with reusable plates and utensils was unfunded in FY04. However, this issue was identified during the EMS Aspects Analysis, and an EMS FY05 objective was established to switch the cafeterias to reusable dishware. This resulted in senior management approval of funding to implement this project during FY05. Problems affecting the cardboard recycling at PX during FY04 were attributed to dumpsters in use were smaller than the regular dumpsters. They filled up quicker and were not able to be picked up by regular garbage trucks. The replacement with standard size dumpsters has been completed and improved recycling of cardboard is anticipated for FY05.

FY 2004 Recycling and Affirmative Procurement Performance

PX has achieved a recycling rate of 54.5%. PX's ability to achieve this recycling rate involves community partnerships with the nearby cities of Panhandle and Wildorado. These activities are highlighted in the PX P2 Best Practices section of this report.

During FY04, 46,460 weapons components from Pantex were sanitized by a subcontractor. The metal generated from this process was recycled, and the revenue from recycling was sufficient to pay the entire cost of sanitization. In all, over 72.6 tons of metal from weapons components were recycled during FY04.

PX has an ongoing program for increasing the purchasing of items identified in the EPA's Consumer Procurement Guidelines (CPG) also known as affirmative procurement. PX had purchases of items listed in the CPG for FY04 totaling \$555,757. Of these purchases, \$151,321 met the CPG requirements for recovered content. This equates to a site-wide adjusted total purchases meeting the requirements for recovered content of 27.2%. PX meets the reporting

requirements but recognizes that improvements in the system are needed. EMS teams have identified this activity as a significant aspect/impact. One of the objectives of the EMS is to fund improvements in this activity.

Environmental Management System Implementation Status

PX's current plan is to have an EMS implemented by 12/31/05, in time to meet the DOE deadline. PX will be self-declaring and will not seek third party certification. PX does intend to seek certification by the Texas Commission on Environmental Quality as a state approved EMS (Clean Texas, Cleaner World). State Certification will provide some regulatory relief in several areas. Currently, Senior Management has approved PX's Environmental Policy. The Environmental Aspects Analysis is completed and significant Aspects and Impacts are identified. Objectives and targets for FY05 have been established. The PX P2 staff have played an integral part of the EMS development at the plant, with participation on the Aspects Analysis Team, assisting with development of the first year EMS targets and objectives, and also ensuring that several waste reduction targets and objectives were established.

Outreach Activities and Awards

The Pantex Plant P2 team provided support to the local communities and has had a positive impact in the area of P2 awareness and community outreach. The Pantex P2 team co-hosted the 2004 Earth Day/Arbor Day Event at Thompson Park in April. Over 1,000 people attended the event. Throughout FY04 the P2 Team's most successful outreach program has raised awareness among the local community by providing numerous presentations on recycling to fifth graders throughout the Amarillo Independent School District. One program, The Voyage of the Mimi, focuses on teaching the fifth graders their four R's—how to reduce, reuse, recycle, and rebuy. This year "the Voyage of the Mimi" surpassed the number of students reached during FY03. Many of these community outreach activities have been included as part of the PX nomination for an FY05 NNSA Pollution Prevention Environmental Stewardship Award for recycling. This award nomination also highlighted the extensive recycling done in conjunction with the nearby cities of Panhandle and Wildorado.

The PX has made excellent progress in the increased use of Bio-Based products. PX's E-85 Fuel Station opened in early FY04. E-85 fuel is a blended fuel consisting of 85% ethanol and 15% gasoline. PX has also switched from regular diesel to the biodiesel fuel, B20. During FY04 PX used over 26,000 gallons of E-85 and over 99,000 gallons of biodiesel fuels on site. By switching to these alternative biobased fuels, PX has reduced the use of petroleum fuels by 26.7%. The plant's increased use of biobased fuels has been nominated for an NNSA 2005 Environmental Stewardship Award.

P2 Program Best Practices (PPOA's and Projects)

The Pantex P2 Team established a recycling partnership that allows the plant to ship waste wood, cardboard, and plastic to Panhandle for recycling. The resulting revenue is then utilized by Panhandle to upgrade the city's recycling capability. PX has established an additional recycling partnership with a company called Natural Fertilizer, a commercial compost producer in Wildorado, TX. All paper on site at PX (including classified documents) is processed through paper disintegrators. The resulting waste is an excellent source of carbon that was needed for

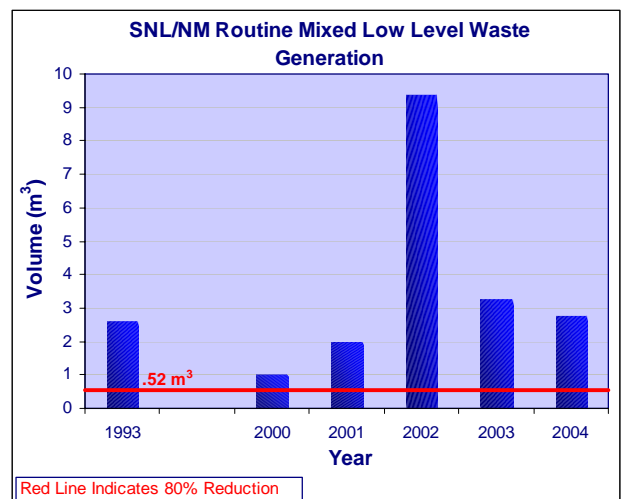
compost produced at Natural Fertilizer. Using the disintegrated paper has proven to be an innovative means to supply a no-cost source of carbon and recycle the paper in a way that benefits the environment. PX benefits by no longer having to dispose of the paper. Disposal at a municipal landfill would have cost \$2,000. As an added benefit, PX has purchased over 375 tons of the finished compost containing PX paper. The compost is used at construction and demolition sites at the Plant to revegetate the land. This is a true “closing the circle” process. During FY 2004, PX has recycled 96,745 lbs. of cardboard, 813,628 lbs. of waste wood, 2,944 lbs. of plastic, and 743 lbs. of newspaper through these partnerships. These efforts have kept 500 metric tons of waste out of landfills. PX’s contributions of recyclable materials generated over \$4,700 for Panhandle’s recycling program and avoided over \$12,500 in disposal costs. These recycling activities were nominated for an NNSA FY05 Environmental Stewardship Award.

PX has established Yellow Belt Teams as part of the plant-wide Six Sigma Process. A Yellow Belt Team would be utilized for projects whose scope is too large for a PPOA. Yellow Belt Teams include representatives from various areas of the plant and are followed closely by PX Management. In FY04, PX received a Notice of Enforcement and a Notice of Violation from the State of Texas for exceeding oil and grease limits for the effluent from the Wastewater Treatment Plant. A Yellow Belt project was initiated to find ways to decrease oil and grease levels in the effluent. Actions were taken by the Yellow Belt Team to close down an oil and water separator that was shown to be ineffective in removing oil. Also, parts cleaning activities in the Plant’s Vehicle Maintenance Facility were modified to reduce the amount of oil and grease being discharged to the sewer. The Yellow Belt Team identified the need for and was able to get funding for an Oil/Water Separator. These accomplishments were included in the list of actions reported to the State of Texas to close out the Notice of Violation. The State also determined that the Notice of Enforcement was not warranted.

Sandia National Laboratories (New Mexico and California)

Introduction and P2 Program Budget

The Sandia National Laboratory’s (SNL) pollution prevention (P2) Program is working to incorporate P2 practices in all aspects of laboratory work, including Albuquerque, New Mexico (SNL/NM) and Livermore, California (SNL/CA) facilities. The SNL program includes efforts to minimize waste generated at the lab, divert waste by recycling, and promote resource and energy conservation. The SNL/NM P2 Program budget for FY04 was just over \$670,000. The FY04 budget for the SNL/CA P2 Program was approximately \$255,000. An additional \$106,000 was provided by SNL/NM line organization to fund P2/Waste Minimization projects. SNL’s P2 budget for FY05 is anticipated to remain funded at these same amounts.



FY 2004 Routine Waste Reduction Performance (by waste type generated)

- **Mixed Low-Level Radioactive Waste (MLLW)**

SNL generates routine low-level radioactive waste (LLW) and mixed low-level radioactive waste (MLLW) as part of its production mission and research and development (R&D) activities.

SNL/NM generated 2.78 m³ of MLLW in FY04.

This amount exceeds the 1993 Baseline amount of MLLW generated at SNL/NM. The 1993 baseline for MLLW generation is so low that attaining the 2005 Secretarial Goal for this waste stream may not be achieved based on current mission work.

SNL/CA generated 0.06 m³ of MLLW in FY 04.

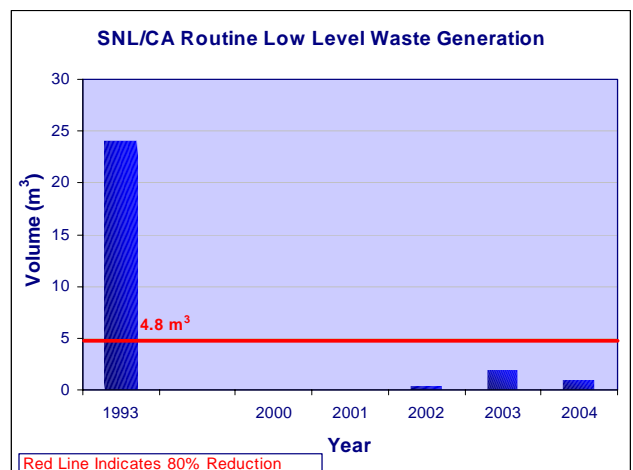
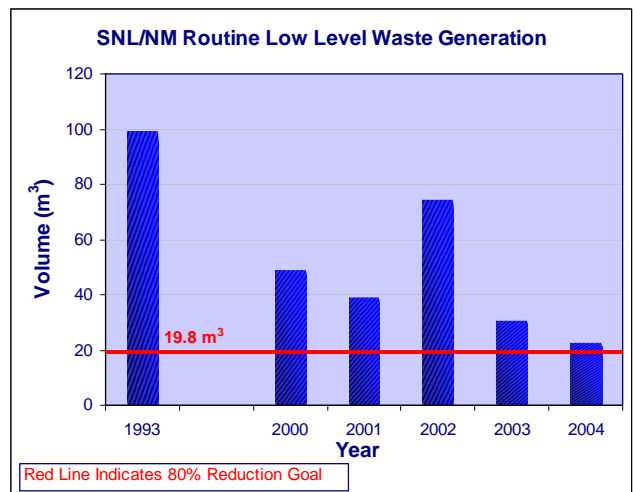
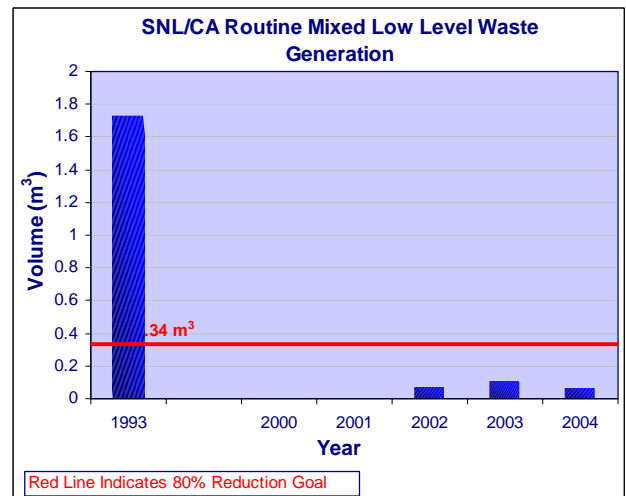
This equates to a 96.5% reduction based on a 1993 baseline of 1.73 m³ for generation of MLLW.

Site Challenges for reduction of both MLLW and Low Level Radioactive Waste (LLW) at SNL/NM include the generation of secondary waste from the processing and shipping of legacy waste. Also, MLLW and LLW produced from R&D activities present a unique challenge in that there are multiple projects each generating small amounts of MLLW/LLW. These projects do not easily lend themselves to traditional P2/Waste Reduction techniques. Several new activities at SNL/CA are planned which will likely increase the amount MLLW/LLW generated in FY05. These projects include:

1. Clean out of the SNL/CA Nuclear Materials Vault.
2. Collection and removal of sources to send to the Nevada Test Site for disposal.
3. Removal of old machine shop equipment that is internally contaminated and unlikely to be reused.

SNL/NM has implemented some ongoing activities and projects to reduce both MLLW and LLW streams. These include:

1. In an effort to focus attention on these problematic waste streams, P2 staff members are on the agenda of the Quarterly meetings for SNL/NM Environmental Protection (EP) representatives to discuss/review the results of the quarterly waste generation by division.
2. In addition to continued implementation of recommendations resulting from a PPOA



performed at the Neutron Generator Production Facility (center 14400); a SNL/NM P2 staff member is permanently assigned to 14400 (50% basis).

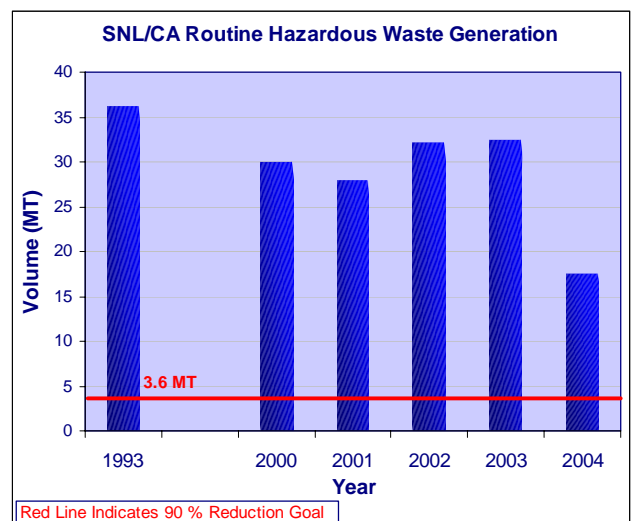
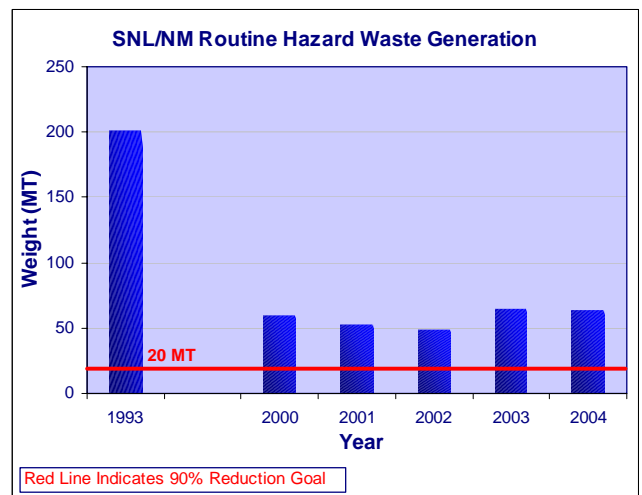
- **Low-Level Waste (LLW)**

In FY04, SNL/NM generated 22.77 cubic meters (m³) of routine low-level radioactive waste. This amount of LLW generation amounts to a 77% reduction compared with the lab's 1993 baseline generation amount of 99.3 m³. SNL/CA generated 0.9 m³ of LLW, which equates to a 96.3% reduction compared with the 1993 baseline of 24.1 m³ of LLW. Challenges to reduce this waste stream at both sites have been identified above. Additionally, SNL/NM has committed to work with the local site office to review and evaluate the current approved release limits for both LLW and MLLW. SNL has identified their belief that much of their current LLW and MLLW are considered to be radioactively contaminated based upon the conservative approach to release limits. The issue is not likely to be addressed in time to help them with achievement of the 2005 Secretarial Goals.

- **Hazardous Waste (HAZ)**

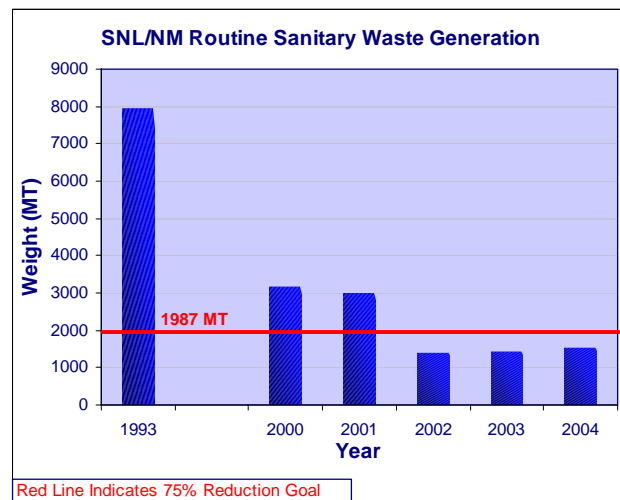
SNL/NM generated 63.89 mt of routine hazardous waste (HAZ) in FY04. This constitutes a 68% reduction compared with the SNL/NM's 1993 baseline of 201 mt's of HAZ. SNL/CA (Division 8000) is in the top three contributors to SNL HAZ waste generation. For FY04, SNL/CA generated 17.6 mt's of routine hazardous waste, accounting for a 51.5% reduction compared with SNL/CA's 1993 baseline for HAZ of 36.2 mt's. Although this is an improvement over the FY03 generation for SNL/CA HAZ generation, SNL is focusing resources to address HAZ generation at both sites. Highlights from FY04 include:

1. One P2 Staff member is permanently assigned to 14100 (40% time). In FY04, four P2 and waste management successes from Manufacturing Science and Technology, Center 14100 were documented.
2. The SNL/CA P2 Coordinator reviewed 55 Interdisciplinary Team (IDT) projects and 13 Safe Operating Procedures (SOP's). These projects are evaluated for waste generation and recycling opportunities.
3. SNL/CA Plating Lab is currently participating in a pilot program that collects empty containers for recycling, in an effort to reduce hazardous waste. These containers,



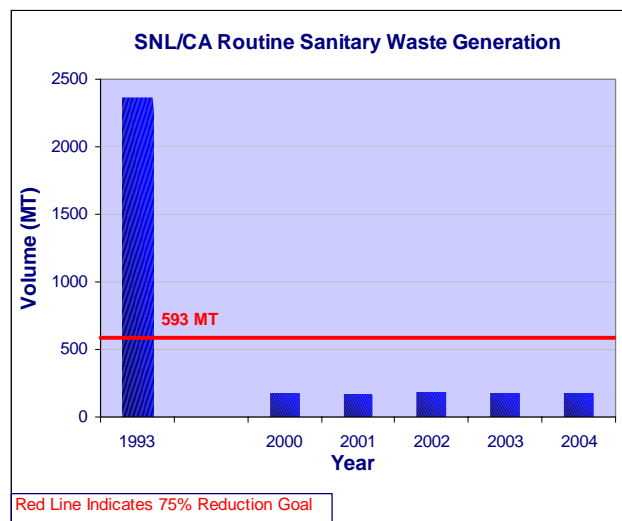
which formerly held hazardous chemicals, are evaluated according to the State of California's definition of an empty container. Prior to participation in this pilot program, SNL/CA disposed of approximately 800kg of empty containers as hazardous waste.

4. A total of thirty four-500ml bottles of hydrofluoric acid (HF) were advertised for re-use through DOE's EPIC Server; the Sandia Daily News; the LLNL Chemical Warehouse; and SNL/NM's Chemical Exchange. A SNL/CA researcher reclaimed the acid saving \$1242.00 in hazardous waste disposal fees.



- **Sanitary Waste (SAN)**

SNL continues to perform well in reducing the generation of routine sanitary waste (SAN) at both laboratories. In FY04, SNL/NM generated 1523 mt's of SAN. This equates to an 80.8% reduction compared with SNL/NM's 1993 baseline year generation of 7946 mt's. SNL/CA generated 176 mt's accounting for a 93% reduction compared with SNL/CA's 1993 baseline year generation of 2,370 mt's. SNL's largest challenge for reduction of SAN generation is attributed to the fact that up to 60% of SNL's routine solid waste stream may be composed of paper, both white and mixed. Currently, only white paper is recycled. SNL is investigating ways to reduce the amount of junk mail disposed at SNL/NM.



FY 2004 Recycling and Affirmative Procurement Performance

SNL/NM's reported FY04 Recycling Rate (as listed in Appendix A) of 10.6% is heavily influenced by Kirtland Air Force Base's (KAFB) change in policy to not accept and use concrete from SNL/NM Deactivation and Decommissioning (D&D) activities in a manner that met the definition of recycling. Large quantities of concrete from D&D activities are considered non-routine waste and significantly impact the overall recycling rate. The SNL/NM routine recycling rate for FY 04 was 43.6%. SNL/NM has identified a project that should allow them to process concrete from future D&D activities for use on-site at both SNL and KAFB. Examples of SNL/NM's recycling include:

SNL/NM recycled and reused 210 tons of material from the deconstruction of Building 805. Materials included carpet, ceiling tiles, laboratory benches and cabinets, metal scrap, and modular wall panels.

SNL/NM recycled 82% of the construction and demolition waste from the JCEL construction project. Materials included recycling or re-using steel / mixed metals, wood, drywall, cardboard, clean concrete, dirt, asphalt, and white paper.

SNL/NM Grounds and Road Services implemented three specific efforts to divert waste from the landfill, save resources, and incur cost savings:

1. Re-Planting: Trees that need to be removed for new construction projects are no longer automatically sent to the landfill. If it is possible to relocate trees and other vegetation, the plants are relocated diverting waste from the landfill and saving the cost of purchasing new plants for another location in need of landscaping.
2. Reuse of Fencing: In the past Grounds and Road Services remove and dispose of perimeter fencing when on-site requirements change. The new practice is to carefully remove, store, and reuse the materials in another location.
3. Gravel Cleaning: When gravel landscaping gets filled with windblown dirt, the gravel was often removed and disposed at the landfill. Now the gravel is removed, cleaned, and reused.

P2 staff worked with the SNL/NM Neutron Generator Production Facility to implement a Tyvek recycling project. Bins to recycle the Tyvek material were placed in identified areas. Operators were trained on bin location as well as which Tyvek materials were acceptable for recycling.

SNL/CA has implemented an active recycling program, achieving a 58.1% recycling rate for FY04. Highlights of the SNL/CA program include:

1. The Extreme Ultraviolet Lithography (EUVL) Laboratory was dismantled due to a change in mission. Laboratory equipment was reclaimed and included lasers, optical tables, clean rooms, clean room supplies and EUVL hardware. A high bay area of 13,000 ft² was completely cleaned out and a 40-yard roll-off was taken to LLNL for reuse. Total value of equipment has not been determined at this time.
2. A fire extinguisher recycling program was implemented. SNL/CA Fire Protection collects the old fire extinguisher and sends them for refurbishment. The refurbished fire extinguishers are supplied and used in third-world countries. Six hundred pounds of extinguishers were sent out in the 4th quarter of FY04.

SNL/NM Affirmative Procurement (AP) performance has improved steadily, due to a consistent and concerted effort by the SNL/NM P2 program and the Procurement Department. In FY04 SNL/NM achieved a 96% affirmative procurement-purchasing rate. SNL/NM total purchases of material with recycled content were \$2,095,082.78 for FY04. This affirmative procurement-purchasing rate was achieved with the help of improvements made in the lab's purchasing system for construction contracts. In FY04, construction purchases of material with recycled content increased by over \$350,000 compared to FY03. Currently, SNL/NM Construction Procurement personnel include reporting requirements in all construction contracts. Training is also provided to contractors to identify locally available items meeting the EPA's Comprehensive Product Guidelines (CPG) for materials with recycled content. SNL/NM

construction inspectors ensure that contractor reporting for construction materials with recycled content is accurate.

SNL/CA reports separately for their site's affirmative procurement purchases. SNL/CA reported a 62% affirmative procurement-purchasing rate for FY04. SNL/CA conducted an Environmental Preferable Purchasing (EPP) awareness campaign. The Sandia staff was notified via the Sandia Daily News (TNT) on the requirements of Executive Order 13101. New EPP posters were printed and distributed to all with purchasing responsibilities. The posters include the EPP list of products. The EPP posters were also distributed on Earth Day.

Environmental Management System Implementation Status

SNL is currently working to implement a laboratory-wide Environmental Management System (EMS) by December 2005 as required by DOE Order 450.1. The laboratory has been evaluating both ISO 14001 and the U.S. Environmental Protection Agency's Code of Environmental Management Principles (CEMP). SNL/NM will pursue implementation of a combination of ISO 14001 and CEMP for its EMS. The lab has not committed to seeking independent third party certification. SNL began the initial Aspects/Impacts analysis to identify significant environmental aspects of the laboratory's operations. SNL has defined their Environmental Management System (EMS) as an enhancement of the environmental elements under their existing ISMS. The SNL P2 staff assisted Environmental Management in its recent campaign to develop EMS awareness tools. The tools include an EMS logo, decorative and informational posters for individual office use, fact sheets and display posters.

Outreach Activities and Awards

As part of the laboratory's FY04 P2 outreach program, SNL/NM sponsored the "Sustainable Design Integrated Educational Series." This program was offered for both the SNL workforce and construction subcontractors who are involved with design and construction activities at the lab. The educational series, consisting of seven separate workshops, was held each month highlighting the U. S. Green Building Council's (USGBC's) Leadership in Energy and Environmental Design (LEED) criteria for sustainable building design. The workshops were well received, with attendance totaling 286 people for the seven workshops.

In April 2004, the SNL/NM P2 team sponsored its annual Earth Day celebration with the theme of "Using Science for a Sustainable Future." Exhibits and speaker topics focused on individuals and groups at SNL/NM that are working in areas such as sustainability, distributed energy, and renewable energy. Exhibits included hydroponics research, innovative sustainable design at SNL/NM, environmentally preferable products, water conservation, LED (Light Emitting Diode) lighting, composting, and energy savings for home and work. Speakers included two SNL/NM scientists and a representative from the Public Service Company of New Mexico, who discussed the New Mexico Wind Energy Project.

SNL/CA celebrated Earth Day in conjunction with LLNL. SNL/CA Environmental Operations, which included P2, Waste Management and Wildlife Biology, were among the 50 presenters participating in Earth Day activities. Approximately 100 people visited the SNL/CA booths. Information on Affirmative Procurement, Hazardous Waste Training and the Wild Side of SNL/CA were provided. SNL/CA also celebrated National Pollution Prevention Week

(September 20-24, 2004). Each day the site reviewed P2 ideas and information via the TNT (Today & Tomorrow) Daily News.

SNL/NM received three “best-in-class” awards as part of the 2004 NNSA Pollution Prevention Award Program. SNL/NM won the following awards: Sustainable Design Integrated Educational Series; Construction Waste Recycling; and Continuous Improvement for Construction Purchases.

SNL/NM was also awarded the FY04 White House Closing the Circle P2 Award, Green Purchasing category for the project “Five Keys to Success: Continuous Improvement for Construction Purchases.” This project demonstrated SNL/NM’s commitment to purchasing green construction materials. Through the implementation of the Green Construction Purchasing Team, more than 99 percent of total construction purchases met the EPA’s recycled content recommendations. Green contract language was added to the template for all construction contracts.

P2 Program Best Practices (PPOA’s and Projects)

To help reduce the SNL/CA hazardous waste generation, a pollution prevention opportunity assessment (PPOA) was completed in FY04 at the SNL/CA Electronic Prototype Lab (EPL). This department was identified during an initial assessment of all waste generators at SNL/CA as a significant generator of hazardous waste. Six opportunities were identified with the potential to reduce hazardous waste and improve water conservation.

SNL/CA also initiated a pilot program in four buildings to collect and shred paper onsite for recycling. This program assures that paper leaving the site is shredded prior to transportation to the recycler and maintains the security of SNL/CA communications. It also makes the sorting of junk mail and office paper obsolete, which is easier for the staff. This pilot program was very successful and will be implemented throughout SNL/CA.

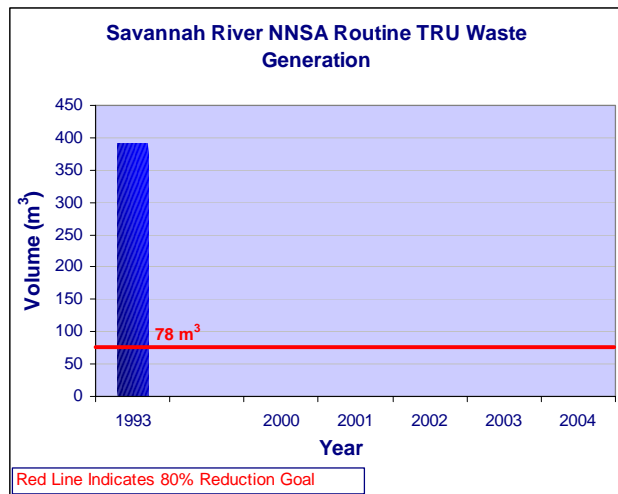
A PPOA for SNL/NM’s Division 14100, Building 878, was completed. Several opportunities identified in the PPOA have been implemented, including: Elimination of mercury thermometers in lab B-1000, Development of a chemical inventory control plan, and Lab-specific P2 training.

SNL/NM completed two extensive benchmarking surveys. SNL/NM P2 staff completed an Affirmative Procurement benchmarking survey to identify activities that could assist SNL/NM in improving its AP performance. Results indicate that SNL/NM purchases the largest amount of recycled content material of any facility surveyed, and can improve its performance by tracking and reporting P-Card purchases. SNL/NM P2 staff also completed a recycling benchmarking survey. The purpose of this survey was to identify activities that could be implemented at SNL/NM to improve its recycling performance. Results show that construction recycling and solid waste generation (per person) were two areas with excellent performance and that SNL/NM could improve its recycling program by collecting mixed paper instead of only white paper.

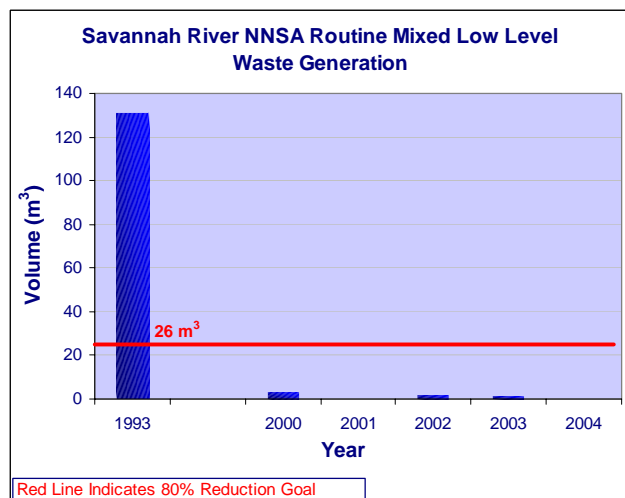
Savannah River Site

Introduction and P2 Program Budget

The Savannah River Site (SRS) is an EM Landlord site that has the NNSA Tritium Operations activity as part of its mission work. At the SRS, the pollution prevention (P2) program is integral to the SRS Environmental Management Policy, Environmental Management System (EMS), and Integrated Safety Management System (ISMS). SRS uses their pollution prevention program as a primary strategy to operate in a compliant, cost-effective manner that protects the environment and the safety and health of employees and the public. The P2 Program has been effectively implemented to reduce employee exposure to toxic and radioactive materials, mitigate environmental impacts of site operations, and in the process, has reduced the cost of operations. SRS's P2 Program strongly believes in the environmental management preference of source reduction and recycling over treatment, storage, and disposal and the preferred use of energy efficient and resource conservative practices and operations.



All SRS P2 programs are funded with EM dollars. There is not a separate budget for NNSA related P2 activities. It is also important to understand that most 1993 NNSA activities at SRS have been transferred to EM. The NNSA baseline is skewed significantly. In Calendar Year 1993, SRS Tritium Operations generated 0 m³ TRU waste; 1.0 mt HAZ; .2 m³ MLLW; and 863 m³ LLW, and did not track SAN data by organization, so all SAN was charged to EM. This data is significantly different than what is being reported as the 1993 baseline in the EH database. The SRS EH database baseline numbers are presented in Appendix A of this report. Using these revised baseline numbers, MLLW and HAZ waste generation by the Tritium Operations is so low that a very small variance is significant from a percent basis, but insignificant from an impact basis.



FY 2004 Routine Waste Reduction Performance (by waste type generated)

- **Transuranic (TRU) Waste**

SRS achieved a 100% reduction of TRU (compared with the 1993 baseline of 391 m³) for all NNSA related work activities in FY04.

- **Mixed Low-Level Waste (MLLW)**

In FY04, SRS achieved a 100 % reduction of MLLW (compared with a 1993 baseline of 131. m3) for all NNSA related work activities.

- **Low-Level Waste (LLW)**

SRS generated 381 m3 of LLW in FY04. This equates to a 95.7% reduction compared with the 1993 baseline of 8862 m3 for the LLW wastestream.

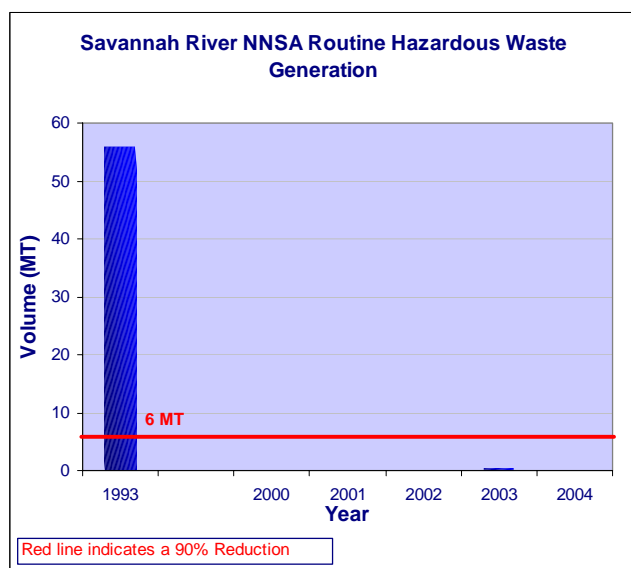
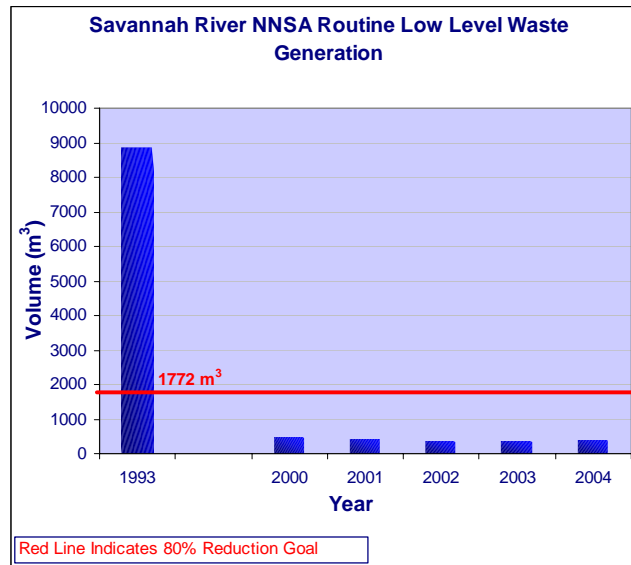
- **Hazardous Waste (HAZ)**

SRS achieved a 100% reduction of HAZ (compared with the 1993 baseline of 56 m3) for all NNSA related work activities in FY04. The Chemical Commodity Management Center (CCMC) is actively involved in the control of all SRS's hazardous waste generation. This organization provides centralized control of chemical materials procurement and management of excess chemical materials. The CCMC has goals to reduce the volume and toxicity of chemical procurements and reduce chemical inventories and waste.

- **Sanitary Waste (SAN)**

No NNSA data is available for sanitary waste generation. The SRS does not track sanitary waste generation data by organization, so all SAN was charged to EM.

FY 2004 Recycling and Affirmative Procurement Performance



The non-industrial waste recycle program is responsible for the management of the non-chemical, non-heavy industrial sanitary waste stream including items such as office paper, cardboard and aluminum drink cans. This program encompasses employee awareness programs to increase participation. The Material Recycling Facility (MRF) in the City of North Augusta, South Carolina is used to segregate and recycle this waste stream.

SRS has an active industrial and office waste-recycling program. SRS achieved a recycle rate of 32% (648 metric tons recycled) of office-type sanitary waste in FY04 and a 34% recycle rate (3,850 metric tons) of the total sanitary waste stream, including industrial waste, in FY04. It should be noted that all SAN generated (and recycled) at SRS is tracked as part of the site's EM budget. No SAN waste generation or recycling is tracked as part of the NNSA's tritium operations.

Environmental Management System Implementation Status

Although the SRS Environmental Management System was previously fully certified to ISO 14001 requirements by an external third party, the decision has been made by SRS to pursue self declaration of their EMS in accordance with DOE G 450.1-1 for future recertification of their EMS due to costs associated with independent certification.

Outreach Activities and Awards

The SRS Pollution Prevention Team actively participated in various types of public outreach events to spread the “Prevent Pollution” message. Earth Day is always a busy time for the SRS Pollution Prevention Team and 2004 was no different. The SRS Pollution Prevention Team hosted an exhibit at the City of Augusta, Georgia’s Earth Day 2004 Event. National Pollution Prevention Week was celebrated at the Savannah River Site with a special event entitled “Individuals Developing Effective Alternative Solutions (IDEAS) Campaign”. The campaign, which focused on recycling and waste reduction, included daily messages in the SRS On-Line News, and displays onsite with prize incentives for participation. Employees from across the Savannah River site were recognized for their waste savings/pollution prevention IDEAS submitted during the campaign.

The SRS nominated P2 project, “Savannah River Tritium Hot Calibration Laboratory (HCL)” was the recipient of a 2004 NNSA Environmental Stewardship Award. The SRS Tritium Production and Reservoir Surveillance Operations require the maintenance and calibration of large numbers of radiological-contaminated pressure and temperature gauges. Without the capability to recalibrate these instruments in place, SRS was previously forced to replace and dispose of these items when calibrations expired or went out of tolerance. The HCL was established to address this issue and currently saves approximately 5 cubic meters of tritium-contaminated waste—with an associated savings of nearly \$350,000/yr in waste disposal and instrument replacement costs.

P2 Program Best Practices (PPOA’s and Projects)

The SRS achieved greater than 95% reduction from the 1993 baseline for each of its waste streams including TRU, LLW, MLLW, and HAZ as referenced and calculated per the EH documentation on NNSA’s 1993 baseline data. To achieve such high rates of waste reduction the SRS P2 program has been actively implementing their site-wide P2 program. DOE-SR approved 51 documented P2 projects resulting in an annualized avoidance of 7,093 m³ of waste in FY2004. The Westinghouse Savannah River Company exceeded its FY04 performance goal of 5,279 m³ by 22.5%. Annual cost avoidance resulting from the 51 documented P2 projects is \$41.5 million.

Y-12 National Security Complex

Introduction and P2 Program Budget

The Y-12 National Security Complex (Y-12) P2 program budget for FY04 was just over \$428 thousand dollars. The budget only provides funding to staff the P2 program and for completion of limited recycling opportunities. This funding currently includes 2 FTE's, some additional subcontractor support for reporting and specific recycling projects (light bulbs and Ni-Cd batteries). All remaining P2 projects must be funded by the individual line organizations. At this current funding level, the P2 program is only able to address minimum compliance. The FY05 budget has been targeted at just over \$433 thousand dollars. This amount will only be sufficient to maintain the current staffing needs for the P2 program. No funding is provided in FY04 for P2 improvement projects beyond minimum compliance.

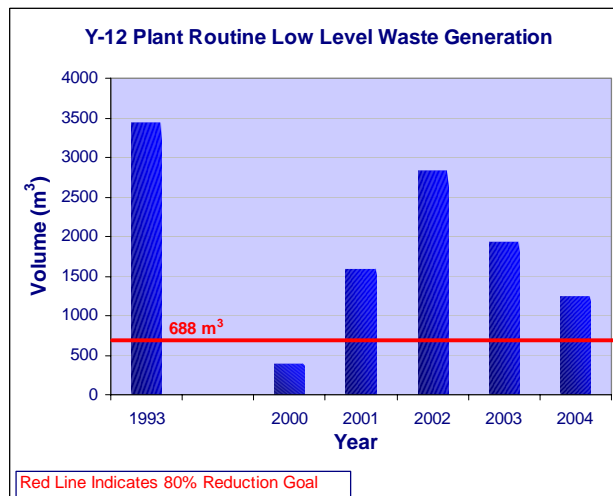
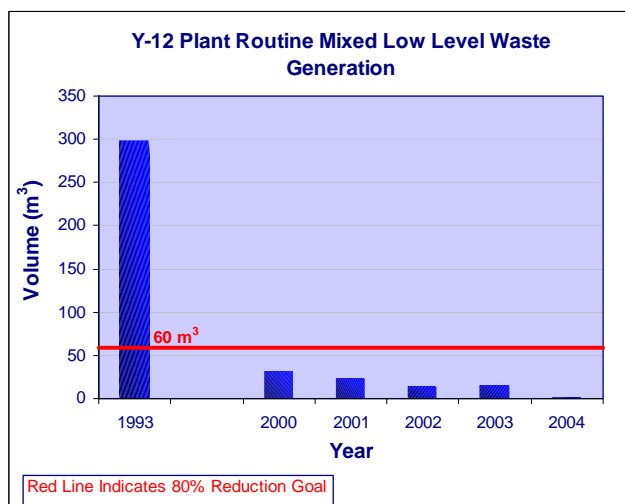
FY 2004 Routine Waste Reduction Performance (by waste type generated)

- **Mixed Low-Level Waste (MLLW)**

Y-12 has been extremely successful at reducing the generation of mixed low-level radioactive waste (MLLW). A site-wide effort to reduce the generation of MLLW in the early 1990's has successfully kept the site's MLLW stream to a minimum. Y-12's FY04 generation of MLLW was 2.06 m³, representing a 99% reduction of MLLW waste compared with the 1993 baseline of 298 m³.

- **Low-Level Waste (LLW)**

Y-12's most challenging waste stream is low-level radioactive waste (LLW). In FY04, Y-12 produced 1239.3 cubic meters (m³) of routine low-level radioactive waste (LLW). This represents a 64% reduction compared with the site's 1993 baseline generation amount of 3,439.7 m³. During FY04, as part of the Y-12's efforts to help reduce the generation of LLW, the initiative, *Y-12 Construction in Rad Areas Reduces Wastes and Costs*, was implemented. Traditionally, construction waste from radiological areas was conservatively managed as solid LLW. Y-12 RADCON personnel questioned this philosophy and developed and implemented measures that through engineering controls greatly reduced the use of Personnel Protective Equipment (PPE) and surveyed and segregated roofing waste materials. This project reduced industrial hazards, reduced waste generation, and improved worker efficiency. The project also eliminated the need

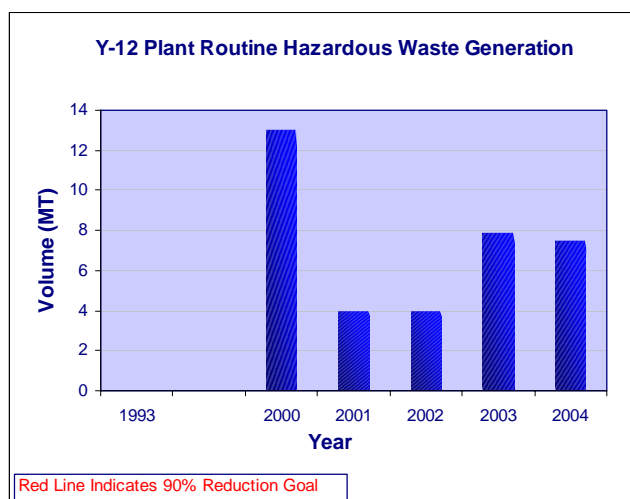


for procurement of 85 metric tons of PPE. Through extensive monitoring and proper segregation of the roofing materials, there was a 65% reduction in the estimated solid low-level radioactive waste that would have been generated from the roofing activity. The combined reduction realized from this effort is estimated at 227 cubic meters of solid LLW with a cost avoidance of \$2.4 million dollars! This initiative was the recipient of an NNSA Environmental Stewardship Award.

- **Hazardous Waste (HAZ)**

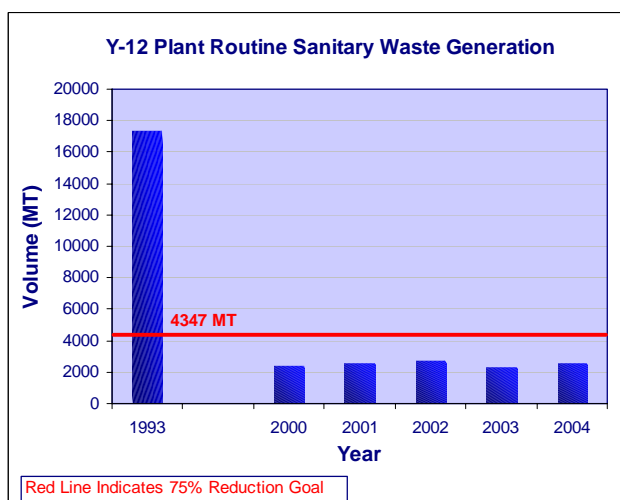
A minimum amount of routine hazardous waste (HAZ) was produced at Y-12 in FY 04. There were 7.47 mt of HAZ waste produced in FY04 (comprised mostly of RCRA regulated waste). There is no baseline data available for this waste stream at Y-12 because all hazardous waste was managed as MLLW in 1993 due to a moratorium. In 2004, Y-12 completed a P2 project with significant reductions of their hazardous waste disposal. The Y-12 Nitric Acid Transfer Initiative, through the perseverance of the Y-12 P2 staff, allowed for the transfer and reuse of almost 14,000 gallons of nitric acid to the Savannah River Site for their onsite use. This resulted in a reduction for Y-12 of more than 70.38 metric tons of hazardous waste (with an associated cost avoidance of more than \$1.2 million dollars!) This activity also resulted in the dual benefit of procurement cost savings of approximately \$8,000! This activity was selected for an NNSA Environmental Stewardship Award.

Y-12 previously implemented a cleaning product substitution project for the site's janitorial services. In FY04, additional vendors for "Green Products" were identified and provided additional reduction of the HAZ waste stream.



- **Sanitary Waste (SAN)**

Y-12 has been actively pursuing reducing the generation of routine sanitary waste (SAN). For FY04, the generation of 2534 metric tons (mt) was reported. This equals an 85.4% reduction for SAN at Y-12 compared with the 1993 baseline generation amount of 17,386 mt. An additional 9635.5 mt of Cleanup/Stabilization waste was produced. This impressive sanitary waste reduction was achieved by the implementation of enhanced recycling efforts at the site. In 2004, new waste streams recycled at Y-12 included wood pallets and wood waste and asphalt from demolition activities used for new road construction.



FY 2004 Recycling and Affirmative Procurement Performance

The Y-12 P2 staff actively pursues the identification and implementation of recycling opportunities at Y-12. Y-12 achieved an impressive 62.7% recycle rate for all SAN waste in FY04. Y-12 was recognized for their outstanding performance in recycling with an NNSA 2004 Pollution Prevention Environmental Stewardship Award. The project, entitled *Y-12 Infrastructure Reduction-Maximizing Recycling*, generates a significant amount of material from clean out and building demolition. To minimize environmental impacts, the Infrastructure Reduction (IR) team integrated pollution prevention measures into all phases of the IR program. The efforts of the IR team resulted in a total reduction of more than 900 metric tons of generated waste with an associated cost avoidance of more than 187 thousand dollars (mainly avoided disposal).

Y-12 has an ongoing program for increasing the purchasing of items identified in the EPA's Consumer Procurement Guidelines (CPG) also known as affirmative procurement. The site had purchases of items listed in the CPG for FY04 totaling \$1,373,431.78. Of these purchases, \$915,127 met the CPG requirements for recovered content. This equates to a site-wide (non-adjusted) total purchases meeting the requirements for recovered content of 66.6%. Y-12 reported a total 92% of adjusted purchases meeting requirements for recovered content.

Environmental Management System Implementation Status

Y-12 will meet the EMS December 2005 deadline for site-wide implementation. A decision was made that Y-12 will not seek third party certification as part of their site-wide EMS. Milestones for Y-12's EMS Implementation completed in FY 04 include: Identification of Y-12 Complex-wide environmental aspects and impacts; development of a procedure for EMS Internal Assessment Program; establishment of training and qualification requirements for EMS auditors, as well as training modules for employee EMS Awareness Training. Y-12 Senior Management also reaffirmed their commitment to the EMS Implementation by updating the ES&H Policy and also making the ES&H Policy available to the public (through the plant's public web, and presentations at the 2004 Safety Expo held offsite).

Outreach Activities and Awards

Y-12's P2 team maintains an active employee awareness campaign for waste reduction. The site sponsors annual Earth Day Events in April of each year. In 2004 the Y-12 P2 team hosted three separate events:

To kick off Earth Day activities on April 20, 2004 the Y-12 P2 Program hosted the distribution of aluminum beverage can recycling revenues to twelve charities, and one Y-12 employee with special needs. Thirteen checks of \$200 each were distributed to these charities in the local community and employee for a total of \$2,600. Besides encouraging employees to recycle, this program fosters good will for Y-12 through the local community. Since the can recycling program began in 1994, over \$62,000 has been donated to various charities.

On April 26, 2004 the Y-12 P2 Program conducted the Earth Day Event at the Y-12 National Security Complex. Activities were conducted on the grounds of the Y-12 Cafeteria, the Building

9113 Canteen, and the Fusion Energy Canteen. Events included the display of P2 and Recycling posters. Additionally, all employees who visited the displays were provided with a magnet with the recently updated Y-12 P2 Website address. The newly redesigned website offered detailed information about the Y-12 program, and information such as recycling, affirmative procurement, and the Aluminum Beverage Can Committee activities. Sections of the website also cover “Community Involvement” and “P2 at Home.”

As part of the 2004 Earth Day Celebration, the annual “Y-12 Pollution Solutions Awards Program” was held on April 27. This program recognizes employees’ outstanding achievement for projects submitted in categories, including: source reduction, recycling/reuse, and reduction of non-routine waste. Twelve awards were presented to employees and organizations for their efforts in pollution prevention.

Y-12 received three NNSA Pollution Prevention Environmental Stewardship Awards in FY04. These awards, presented by the newly appointed Principle Deputy Administrator for NNSA, recognized Y-12’s outstanding achievement of pollution prevention in the area of recycling, waste reduction, and education, outreach and information sharing.

P2 Program Best Practices (PPOA’s and Projects)

The Y-12 Project, *Innovative Roadway Paving Application*, demonstrated how the Y-12 Maintenance staff integrated cost-effective P2 into roadway resurfacing. This project minimized the use of repaving materials, extended the newly paved roadways’ life, minimized the need for procurement of materials for gravel access roadways, and reused asphalt materials removed prior to resurfacing asphalt roadways. Previously, this project had eliminated the generation of 2,825 metric tons of industrial wastes, resulted in a cost avoidance of more than \$141,000 and eliminated the need to buy 2,825 metric tons of limestone base gravel. This activity was also the recipient of the Y-12 Site Pollution Solutions Award.

The Y-12 Environmental Management Systems (EMS) Sustainability Initiative was selected to receive an NNSA “Best in Class” Environmental Stewardship Award. This initiative fully integrates pollution prevention and sustainability concepts into all Y-12 environmental planning procedures and operations and will help to ensure the implementation of an effective EMS at Y-12 by the DOE mandated December 2005 date. In FY 2004, Y-12 implemented 72 P2 projects in support of this initiative’s EMS Objectives and Targets, resulting in the reduction of approximately 21 million kilograms of waste (and an associated cost savings/avoidance of over \$6.4 million dollars!).

Appendix A: NNSA/NNSA Site Specific FY 2004 Routine Waste Generation & Waste Reduction Performance Data

**FY 2004 NNSA Site P2 Waste Generation Data and Waste Reduction Performance
(Routine Generation)**

Site	TRU m3	LLW m3	MLLW m3	HAZ mt	SAN mt	Recycle rate (%)
LANL	60.7	787	4.7	19.1	1476	66.5
% reduction	5	51.2	46.4	93.4	47	
Baseline	63.89	1613	8.77	288.42	2781	
SNL/CA	0	.9	.06	17.58	176	58.1
% reduction		96.3	96.5	51.5	92.6	
Baseline	0	24.12	1.73	36.24	2370	
SNL/NM	0	22.77	2.78	63.89	1523	10.6
% reduction		77.1	0	68.2	80.8	
Baseline	0	99.25	2.61	201.13	7946	
Pantex	0	46	2.16	29.92	690	54.5
% reduction		64.6	94.2	98	0	
Baseline	0	130	37.5	1492.61	304	
LLNL	1.16	128.34	10.55	115.5	1675	85.5
% reduction	90.4	20	87.3	78	77.8	
Baseline	12	160.25	83.33	523.87	7548	
Nevada	0	0	0	15	4383	12.2
% reduction				99.6	68	
Baseline	0	0	0	3785.82	13735	
Y-12	0	1239.33	2.06	7.47	2534	62.7
% reduction		64	99.3	0	85.4	
Baseline	0	3439.68	298.3	0	17386	
SRS (NNSA)	0	381	0	0 (All EM)	0	N/A
% reduction	100	95.7	100	100	N/A	
Baseline	390.77	8862	131.16	55.99	0	
KC	0	0	0	55.65	1398	66.1
% reduction		100		82.6	80	
Baseline	0	0.21	0	319.33	6974	
Bettis	0	0	0	0	2238	54.5
% reduction					28.3	
Baseline	0	505	0	22	3122	
KAPL	0	104.81	.75	4.34	960	54.8
% reduction		67.5	55.9	99.8	50.7	
Baseline	0	322	1.7	1743	1948	
*Argonne East						
Baseline		0				
* ORNL						
Baseline	0.67	303		0.04		
* Mound						
Baseline		849.5				
Generation Totals	61.86	2,710.2	23.06	328.45	17,053	
Baseline	467.33	16,308	565.1	8,468.45	64,114	
FY04 NNSA						
% Reduction	86.8	83.4	95.9	96.1	73.4	52.6
2005 Goal (%)	80	80	80	90	75	45

*Indicates non-NNSA DOE Site FY04 NNSA Generation and Baselines – numbers are included in Generation Totals and 2004 NNSA% Reduction.

Appendix B: NNSA Headquarters/Service Center Service Level Agreement

National Nuclear Security Administration Service Level Agreement Pollution Prevention Program Mission, Functions and Responsibilities Revision A

Pollution Prevention Program Mission:

The National Nuclear Security Administration (NNSA) pollution prevention (P2) program mission is to eliminate or minimize the generation of waste and release of pollutants to the environment by implementing cost-effective pollution prevention techniques, technologies, practices, and policies within the NNSA mission programs. The NNSA will simultaneously conduct its mission operations in such a way as to minimize impact on the environment, enhance the safety of operations, and promote the sustainable and responsible use of natural resources.

This document provides the Functions/Roles and Responsibilities for the Service Center P2 staff to manage and conduct the NNSA P2 program. These roles and responsibilities are established to support the responsibilities of NA 3.6.

Roles and Responsibilities for NNSA Service Center Pollution Prevention Program Staff per the Direction and Authority of NA 3.6

P2 Programmatic Leadership to NA-3.6: The Service Center P2 staff under the direction and on behalf of NA 3.6 will provide corporate P2 programmatic leadership and coordination for the implementation and operation of NNSA's pollution prevention program.

- Manages and provides P2/Waste Minimization guidance to NNSA site offices on behalf of NA 3.6.
- Provides coordination, technical support and assistance for the NNSA-wide pollution prevention effort to HQ program elements, site offices and sites to achieve best in class P2 programs.
- Represents NNSA as technical advisor for DOE-wide P2/Waste Minimization (Waste Min.) initiatives.
- Coordinates and manages NNSA-wide P2/Waste Min. requirements, initiatives and activities including service center contractor support to develop NNSA products and workshops provided for by NA 3.6.
- Provides technical expertise and advice to NA-3.6 on Departmental P2/Waste Min. policy and guidance issues affecting NNSA.

Pollution Prevention Goals and P2 Program Objectives: Provides management-level programmatic effort to achieve waste reduction goals and best in class P2 site programs.

- Assists site offices in setting quantitative site-specific goals and provides technical expertise and advice in setting pollution prevention priorities and strategies to achieve P2 goals.
- Oversees progress and assists in resolving issues associated with P2 goal achievement.
- Provides advocacy and assistance to site offices and sites, where applicable, for determining funding needs for pollution prevention projects and overall conduct of P2 programs; provides

technical expertise and advice to site offices and sites to assure budgets are formulated to achieve waste reduction goals and P2 program objectives.

- Facilitates NNSA issue resolution for promoting pollution prevention at sites.
- Monitors, tracks and verifies NNSA site progress in achieving site specific and NNA established Pollution Prevention goals, conducts site P2 program visits and information requests to support the P2 effort.
- Provides other P2/Waste Min. technical support and subject matter experts to NNSA site office P2 programs as requested.
- Develops and implements the NNSA P2 awards program.
- Works with site offices to institute effective performance measures and assure inclusion in site contracts.
- Monitors NNSA site progress in Environmental Management Systems implementation and provide technical assistance as needed.

Management Commitment: Enhance senior management commitment to pollution prevention programs.

- Provide periodic updates to NA 3.6 on status of NNSA P2 program (highlights, best practices, programmatic concerns, etc.).
- Collects P2 data and P2 program information from NNSA sites to develop annual NNSA P2 progress summary report for transmittal to NA 3.6 (includes annually reported data, site P2 program summary data, findings and issues).
- Provides assistance to site offices to establish and maintain Site Office management commitment to pollution prevention program implementation and sustainability.

Regulatory Review/Reform: Ensure NNSA environmental policies and guidance facilitate compliance with pollution prevention laws, regulations and Executive Orders.

- Provides technical expertise and advice to NA-3.6 on Departmental P2/Waste Min. policy and guidance issues affecting NNSA to ensure compliance with all requirements.
- Provides assistance and technical expertise to site offices to ensure site programs comply with federal, state and Departmental requirements.

Partnerships and Information Exchange:

- Establishes and maintains external partnerships with industry, academia and other federal agencies to promote NNSA pollution prevention program (i.e., New Mexico Environmental Alliance, Strategic Environmental Research and Development Program, etc.).
- Develops and implements an effective process for information sharing including benefits and best practices across NNSA sites.
- Provides technical expertise and information exchange opportunities to identify and implement cost-saving pollution prevention projects.

Generator Specific Programs:

- Provides technical assistance to site offices and sites where applicable in developing and implementing an NNSA Return On Investment (ROI) initiative per the requirements of DOE Order 450.1 and EO 13148.
- Provides assistance to site offices in establishing Generator Set-Aside Fee funding program to provide P2 project implementation funding source.

New Processes and Facilities Design:

- Assist site offices and sites to assure pollution prevention is designed into new products, processes and facilities.

Research and Development:

- Provides technical expertise to site offices and sites in developing and applying innovative pollution prevention technologies for problematic waste streams.

Training and Awareness:

- Provides assistance to site offices and sites to provide training and awareness opportunities as requested.

_____*Original Signed by James Mangeno*_____
James J. Mangeno, Senior Advisor for Environment,
Safety and Health, NNSA/HQ (NA-3.6)

____10/13/04_____
Date

Appendix C: Draft Pollution Prevention Program 2006 and Beyond Goals

Table 1 Draft P2 Goals (effective 2006) Revised Nov 8 2004 based on site comments

Key: **Bold** = suggested new text; *italics* = present text to be deleted if new text is accepted;

Performance Objectives for the Department	Performance Expectations (Department-wide Goals)	Proposed Metrics for Site Tracking and Reporting
A. Demonstrate Pollution Prevention as a Good Business Practice to Enhance Site Operations and Mission Accomplishment, Achieve Environmental Compliance, Reduce Risks to Health and the Environment, and Prevent Future DOE Legacy Wastes	<p>A.1. <u>To reduce life-cycle costs and liabilities, the Department will:</u></p> <p>a. eliminate, minimize, and recycle routinely generated wastes that would otherwise require storage, treatment, disposal, and long-term monitoring and surveillance.</p> <p>b. eliminate or reduce purchase and use of priority toxic chemicals² that would otherwise require control, treatment, monitoring, and reporting.</p> <p>c. eliminate or reduce the release of Toxic Release Inventory (TRI) chemicals that would otherwise require control, treatment, monitoring, and reporting.</p> <p>d. maximize purchase use of environmentally preferable products (EPP) and services thereby minimizing the economical and environmental impacts of managing by-products and wastes generated in the conduct of mission-related activities.</p> <p>e. maximize environmental sustainability <i>building efficiency</i> through application of sustainable design principles and selection of environmentally preferable construction materials thereby minimizing the economical and environmental impacts of managing by-products and wastes generated in the conduct of mission-related activities.</p>	<p><u>Track and report annually on:</u></p> <p>A.1.a. amount of routinely¹ generated TRU, LLW, MLLW, Hazardous, and Sanitary waste compared to the previous year; amount of <i>routinely</i> generated waste recycled compared to the previous year.</p> <p>A.1.b. activities* undertaken to eliminate or reduce the purchase and use of priority toxic chemicals² and ozone depleting substances³.</p> <p>A.1.c. release of TRI toxic chemicals compared to the previous year.</p> <p>A.1.d. purchase use of bio-based, recycled content, and environmentally preferable products and services compared to previous year.</p> <p>A.1.e. <i>LEED scoring of site's new and retrofitted buildings.</i> activities* undertaken to incorporate environmentally preferable materials into the design and construction of new and retrofitted buildings</p> <p>* reported as accomplishments</p>

Performance Objectives for the Department	Performance Expectations (Department-wide Goals)	Proposed Metrics for Site Tracking and Reporting
	<p>A.2. <u>To demonstrate corporate commitment to improved environmental performance through P2 in EMS/ISMS , the Department will:</u></p> <p>a. maintain verified EMSs by incorporating EMS in the site ISMS in site contracts.</p> <p>b. avoid or minimize significant environmental aspects and impacts⁴ by identifying and funding cost effective P2 opportunities.</p> <p>c. ensure that site EMSs provide for the systematic planning, integrated execution, and evaluation of programs for P2 by including P2 operational assessments into site planning, operational, and ISM/EMS assessment documents and procedures.</p> <p>d. promote P2 as a mechanism to eliminate or reduce environmental aspects by developing and maintaining environmental outreach activities.</p>	<p><u>Track and annually report, as accomplishments,</u></p> <p>A.2.a. activities to maintain a verified EMS.</p> <p>A.2.b. <i>number of</i> P2 operational assessments conducted for significant aspects identified in the EMS; and <i>the number of</i> P2 projects implemented pursuant to these assessments.</p> <p>A.2.c. activities to incorporate P2 operational assessments into safety analysis reports, work approval processes, or similar planning documents and procedures.</p> <p>A.2.d. activities to promote P2.</p>

¹ Under a proposed definition, routine operation wastes are those waste associated with all site activities except for cleanup and stabilization of legacy wastes, lab/vault cleanouts, D&D, and spills. Lab/vault cleanouts will be reported as a separate P2 implementation, risk-reduction activity. **Routine waste is a waste produced from on-going operations; non-routine wastes are legacy wastes.** [Note: the definition of “legacy” is under review by EM.]

² The EPA’s priority chemicals targeted for use reduction are listed at <http://www.ofee.gov/gp/pchemical.html>. Sites not using these chemicals, or using chemicals that are more toxic, could select and target their own high priority chemicals for use reduction based on their EMS aspects and impacts analysis.

³ The existing 2010 goal is to eliminate the use of class I ozone depleting substances, to the extent economically practicable, and to the extent that safe alternative chemicals are available for DOE class I applications.

⁴ A significant environmental aspect is defined as an environmental aspect that has or could have a significant impact on the environment, the organization, or to the organization's mission (ISO 14000, 1996).

Performance objective is a statement of desired outcomes [intent] for an organization of activity

Performance expectation is the desired condition or target level of performance for each measure; can be characterized as a target, goal or standard

Metric is a standard or unit of measures.

Appendix D: NNSA Pollution Prevention Program Staff Point of Contact List

Location	Name	Phone Number	FAX Number	Internet Address
HQ NNSA 3.6	James Mangeno*	(202) 586 - 8395	(202) 586 - 9060	James.Mangeno@nnsa.doe.gov
NNSA Service Center	Mike Sweitzer*	(505) 845 - 4347	(505) 845 - 4025	msweitzer@doeal.gov
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